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ARANTINE HILLS SPECIFIC PLAN
TRAFFIC IMPACT ANALYSIS (REVISED)
CITY OF CORONA, CALIFORNIA

August 11, 2011 (Revised)

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ARANTINE HILLS SPECIFIC PLAN
TRAFFIC IMPACT ANALYSIS (REVISED)
CITY OF CORONA, CALIFORNIA

1.0 INTRODUCTION

1.1 Purpose of Report and Study Objectives

This study has been revised using the traffic forecasts provided from the recently completed City of Corona Traffic Model. In addition, this study has been modified based on feedback from comments provided by the City of Corona and the California Department of Transportation (Caltrans). Appendix 1.1 includes the City of Corona comments letters and Appendix 1.2 includes our response to the Caltrans comment letter provided on April 1, 2010.

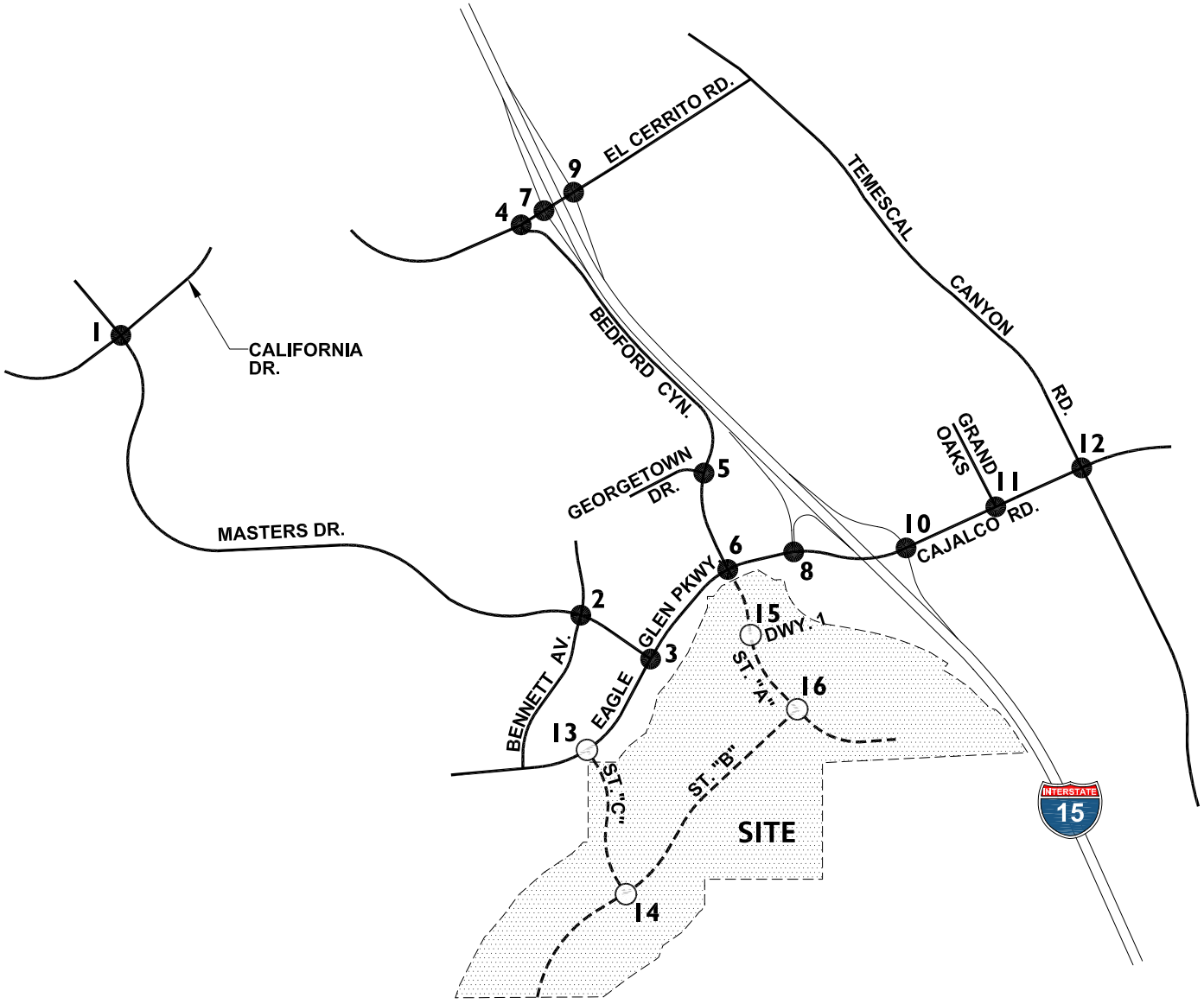
The purpose of this traffic impact analysis (TIA) report is to evaluate the Arantine Hills Specific Plan project from a traffic circulation standpoint. Study objectives include (1) documentation of existing 2009 traffic conditions in the vicinity of the site; (2) evaluation of 2014 without and with Project Phase 1 conditions; (3) evaluation of 2019 without and with Project Buildout conditions; (4) evaluation of future year 2035 without and with Project Buildout conditions; and (5) determination of on-site and off-site improvements needed to achieve City of Corona level of service requirements. This analysis and report have been prepared in accordance with the City of Corona *Traffic Impact Study Guidelines*, dated July 2006.

1.2 Site Location and Study Area

The project site is generally located south of Eagle Glen Parkway and west of the I-15 Freeway in the City of Corona. Exhibit 1-1 illustrates the site location and the traffic analysis study area. Per the City of Corona guidelines, the study area shall include any key intersection of "collector" to "collector" or higher classification streets, on which the proposed project will add 50 or more peak hour trips from the project site. Pursuant to the attached Traffic Impact Study Scope (see Appendix 1.3) and discussions with City of Corona Public Works Department, the study area includes sixteen (16) existing and future intersections listed below.

EXHIBIT 1-1

LOCATION MAP



LEGEND:

● = EXISTING INTERSECTION ANALYSIS LOCATION

○ = FUTURE INTERSECTION ANALYSIS LOCATION

N

Masters Drive (NS) at:

- California Avenue (EW) [1]
- Bennett Drive (EW) [2]
- Eagle Glen Parkway (EW) [3]

Bedford Canyon Road (NS) at:

- Foothill Parkway (EW) [4]
- Georgetown Drive (EW) [5]
- Eagle Glen Parkway (EW) [6]

I-15 Southbound Ramps (NS) at:

- El Cerrito Road (EW) [7]
- Eagle Glen Parkway (EW) [8]

I-15 Northbound Ramps (NS) at:

- El Cerrito Road (EW) [9]
- Cajalco Road (EW) [10]

Grand Oaks (NS) at:

- Cajalco Road (EW) [11]

Temescal Canyon Road (NS) at:

- Cajalco Road (EW) [12]

Street C (NS) at:

- Eagle Glen Parkway (EW) [13] – future intersection
- Street B (EW) [14] – future intersection

Street A (NS) at:

- Project Driveway (EW) [15] – future intersection
- Street B (EW) [16] – future intersection

1.3 Project Development Description

1.3.1 Project Description

The proposed Arantine Hills Specific Plan project consists of the following land uses as summarized on Table 1-1:

-
- 549 single-family detached dwelling units
- 1,072 multi-family attached dwelling units
- 4 acres of passive park
- 11 acres of active park
- 59,000 square feet of general office use
- 230,900 square feet of business park use
- 59,000 square feet of specialty retail use
- 396,400 square feet of shopping center use

1.3.2 Project Access

The proposed Arantine Specific Plan project will have the following two (2) access points on Eagle Glen Parkway:

- Street A: Street A will be the southerly extension of Bedford Canyon Road and the new south leg of the intersection of Bedford Canyon Road at Eagle Glen Parkway.
- Street C: Street C will intersect Eagle Glen Parkway to form a new T intersection west of Masters Drive.

1.3.3 Land Use Plan

Exhibit 1-2 illustrates the land use plan used for this traffic analysis. This land use plan is subject to refinement and revision, based on planning, engineering, and environmental considerations.

Table 1-1

Arantine Hills Specific Plan Land Use Quantities

Land Use Quantity[1]			
Description	**Phase 1 (2014)**	**Phase 2 (2019)**	**Total Cumulative**
Single Family Detached Homes	310 DU	239 DU	549 DU
Multi-Family Attached Residential	597 DU	475 DU	1,072 DU
Passive Park	3.0 AC	1.0 AC	4.0 AC
Active Park	11.0 AC	-	11.0 AC
General Office	59.00 TSF	-	59.0 TSF
Business Park	230.90 TSF	-	230.9 TSF
Specialty Retail	59.00 TSF	-	59.0 TSF
Shopping Center	-	396.4 TSF	396.4 TSF

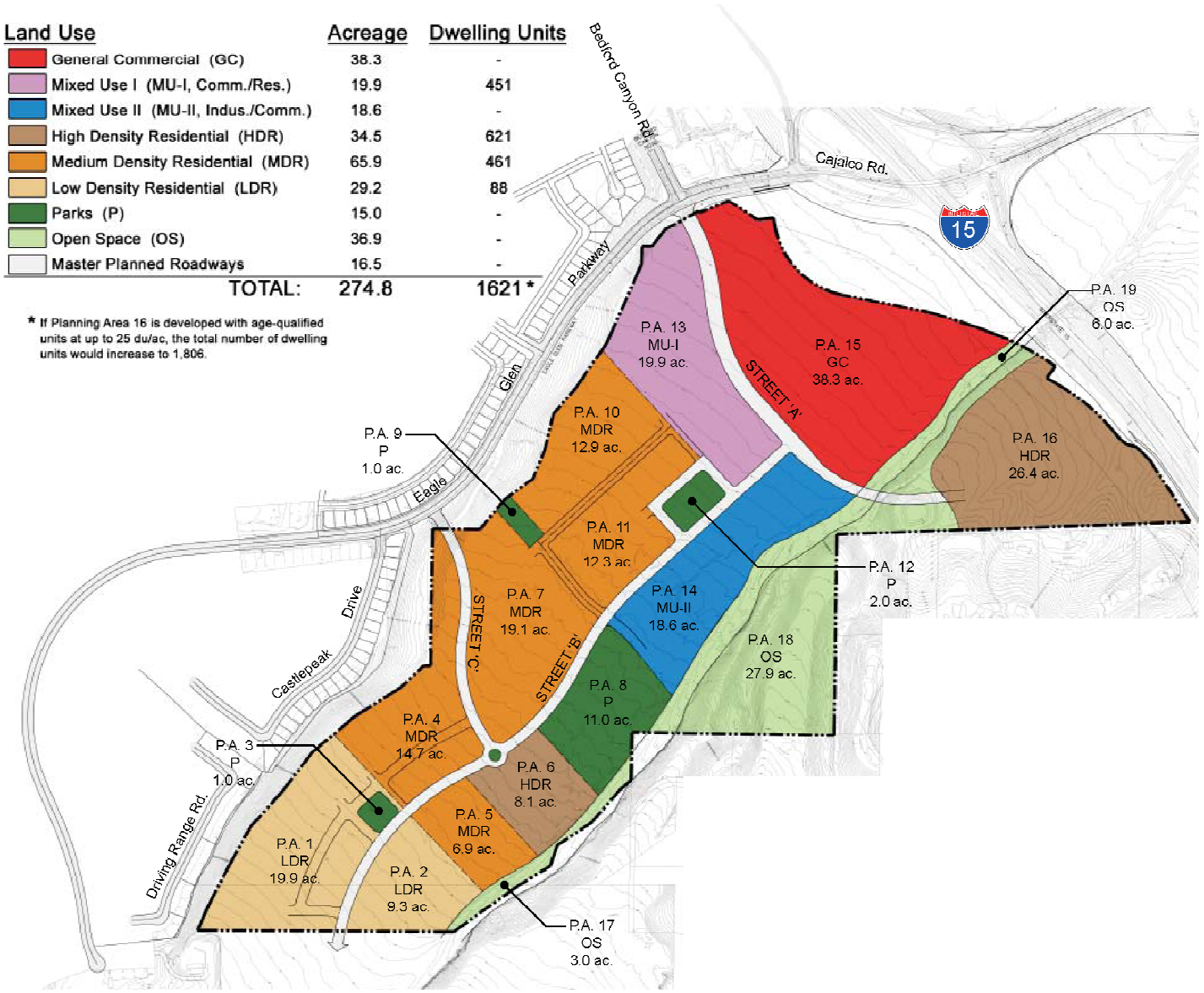
[1] DU = Dwelling Units; TSF = Thousand Square Feet of gross floor area; AC = Acres

EXHIBIT 1-2

LAND USE PLAN

Land Use	Acreage	Dwelling Units
General Commercial (GC)	38.3	-
Mixed Use I (MU-I, Comm./Res.)	19.9	451
Mixed Use II (MU-II, Indus./Comm.)	18.6	-
High Density Residential (HDR)	34.5	621
Medium Density Residential (MDR)	65.9	461
Low Density Residential (LDR)	29.2	88
Parks (P)	15.0	-
Open Space (OS)	36.9	-
Master Planned Roadways	16.5	-
TOTAL:	274.8	1621 *

* If Planning Area 16 is developed with age-qualified units at up to 25 du/ac, the total number of dwelling units would increase to 1,806.



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1.3.4 Project Phasing

The proposed project is anticipated to be built out and fully occupied by the end of 2019. The phasing plan of the project is summarized on Exhibit 1-3 and Table 1-1. Phase 1 of the project, which will be completed in 2014, consists of the following land uses:

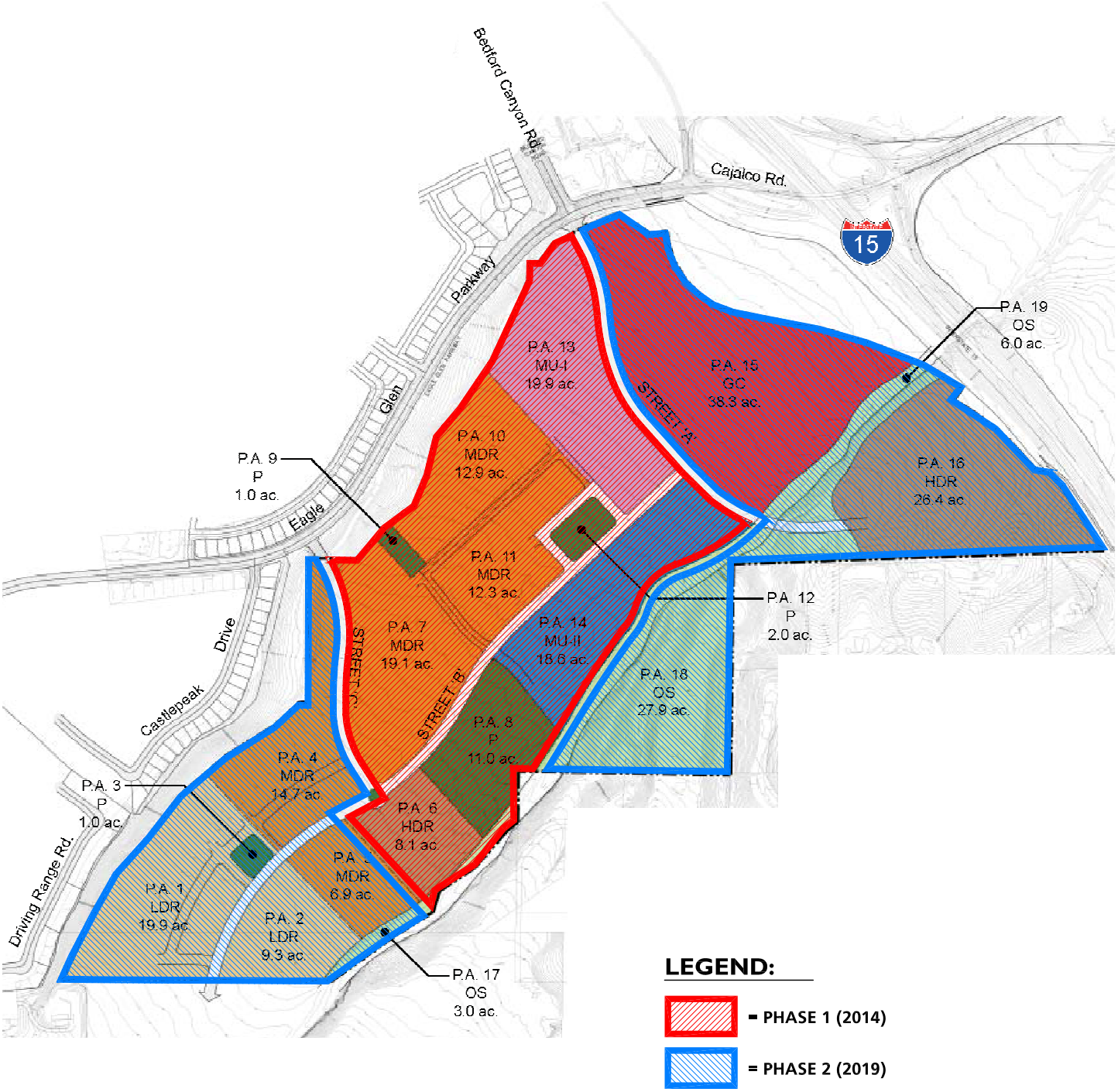
- 310 single-family detached dwelling units
- 597 multi-family attached dwelling units
- 3 acres of passive park
- 11 acres of active park
- 59,000 square feet of general office use
- 230,900 square feet of business park use
- 59,000 square feet of specialty retail use

Phase 2 (remainder of the project), which will be completed in 2019, consists of the following land uses:

- 239 single-family detached dwelling units
- 475 multi-family attached dwelling units
- 1 acre of passive park
- 396,400 square feet of shopping center use

EXHIBIT 1-3

PROJECT PHASING PLAN



2.0 AREA CONDITIONS

2.1 Study Area

Pursuant to the Traffic Impact Study Scope (Appendix 1.3) and discussions with the City of Corona Public Works Department, the study area includes the sixteen (16) existing and future intersections shown previously on Exhibit 1-1.

2.2 Existing Traffic Controls and Intersection Geometrics

Exhibit 2-1 identifies the existing roadway conditions for study area roadways. The number of traffic lanes for the existing roadways and the existing intersection controls are also identified. As shown on Exhibit 2-1, Glen Eagle Parkway Avenue and Cajalco Road are currently four-lane divided roadways. El Cerrito Road, Bedford Canyon Road and Masters Drive are two-lane undivided roadways.

2.3 Existing 2009 Traffic Volumes

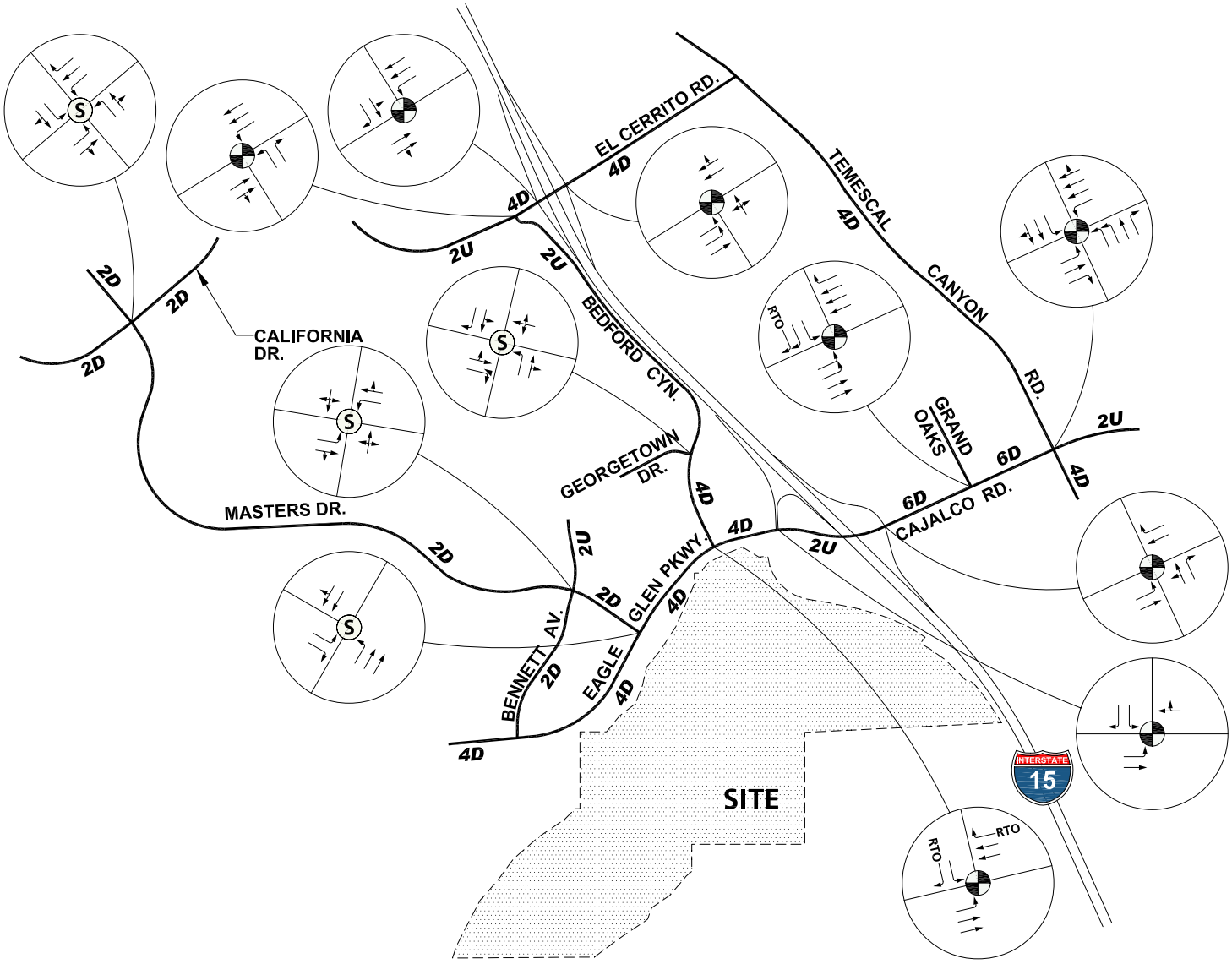
Existing 2009 AM and PM peak hour intersection turning movement volumes are shown on Exhibits 2-2 and 2-3, respectively. Traffic counts are conducted in September 2009, and the traffic count data sheets are included in Appendix 2.1 of this report. Adjustments have been made to the traffic counts in order to achieve conservation of traffic flow on the roadway segment between adjacent intersections. Manual traffic flow adjustment spreadsheets are included in Appendix 2.1 of the revised report.

Existing 2009 average daily traffic (ADT) volumes are shown on Exhibit 2-4. Existing 2009 ADT volumes along the roadway segments are estimated based on actual peak hour intersection turning movement counts using the following formula for each intersection leg:

- PM Peak Hour (Approach Volume + Exit Volume) x 12 = Leg Volume

EXHIBIT 2-1

EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



LEGEND:

- = TRAFFIC SIGNAL
- (S) = ALL WAY STOP
- = FREE RIGHT TURN
- RTO = RIGHT TURN OVERLAP
- *4* = NUMBER OF LANES
- *D* = DIVIDED
- *U* = UNDIVIDED

N

EXHIBIT 2-2

EXISTING 2009 AM PEAK HOUR INTERSECTION VOLUMES

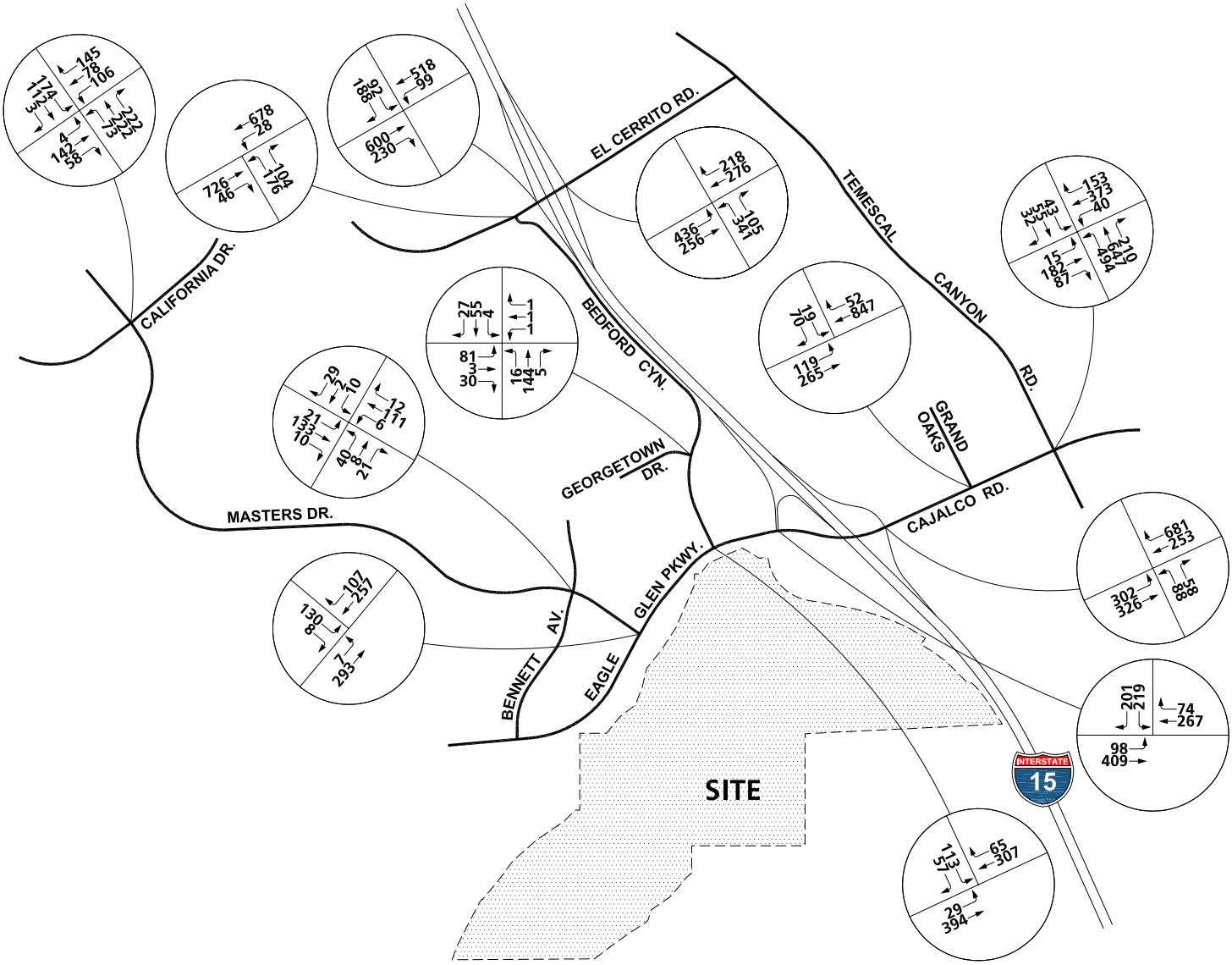


EXHIBIT 2-3

EXISTING 2009 PM PEAK HOUR INTERSECTION VOLUMES

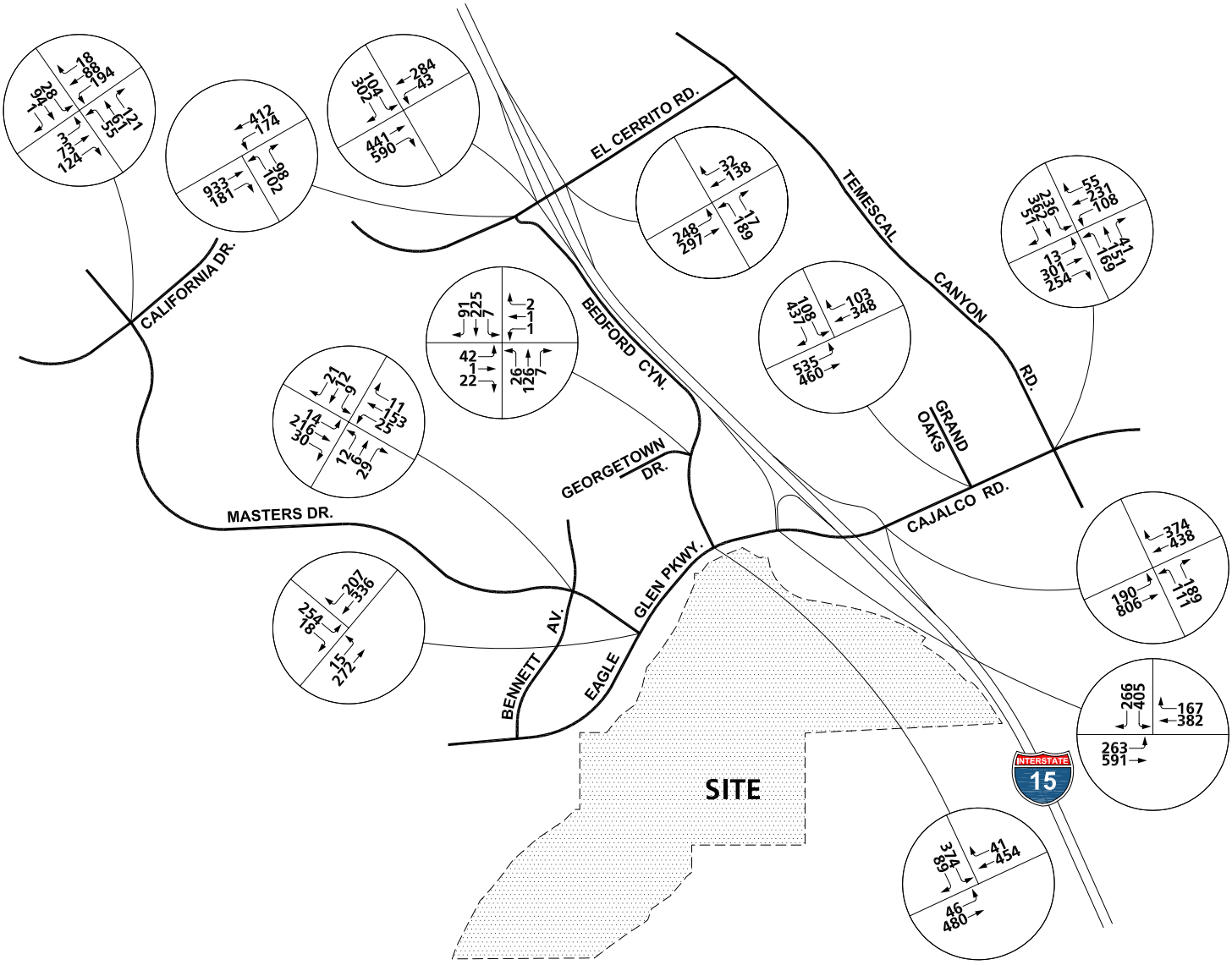


EXHIBIT 2-4

EXISTING 2009 AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

2.4 Existing 2009 Conditions Traffic Signal Warrants

A detailed description of the traffic signal warrant analysis methodologies is presented in subsequent Section 4.3. Based on existing 2009 traffic conditions, the following two (2) existing unsignalized study area intersections are currently warranted for traffic signals:

Masters Drive (NS) at:

- California Avenue (EW) [1]
- Eagle Glen Parkway (EW) [3]

Traffic signal warrant analysis for Existing 2009 conditions is included in Appendix 2.2 of this report.

2.5 Existing 2009 Conditions Intersection Operations Analysis

The current technical guide to the evaluation of intersection operations is the 2000 Highway Capacity Manual (HCM) (Transportation Research Board Special Report 209). The results of an HCM analysis are expressed in terms of "Level of Service" (LOS), ranging from LOS "A" which is free flowing traffic, to LOS "F", which is stop-and-go traffic. A detailed description of the intersection operations analysis methodologies is presented in subsequent Section 4.4 of this report, and the subsequent Table 4-1 presents the LOS threshold for the study area intersections.

The results of the existing 2009 conditions intersection operations analysis are summarized in Table 2-1, along with the existing intersection geometrics and traffic control devices at each analysis location. For existing 2009 traffic conditions, all of the twelve (12) existing study area intersections are currently operating at acceptable levels of service during the peak hours with existing geometry, except for the following location:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F (AM peak hour)

Existing 2009 conditions intersection operations analysis worksheets are included in Appendix 2.3 of this report.

Table 2-1

Existing 2009 Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at: • California Dr. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	--[4]	11.1	F	B	C
2	Masters Dr. (NS) at: • Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	8.6	9.2	A	A	C
3	Masters Dr. (NS) at: • Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	11.5	14.2	B	B	D
4	Bedford Cyn. Rd. (NS) at: • El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	17.4	19.4	B	B	D
5	Bedford Cyn. Rd. (NS) at: • Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	8.7	9.1	A	A	C
6	Bedford Cyn. Rd. (NS) at: • Eagle Glen Pkwy. (EW)	TS	0	0	0	1	0	1>	1	2	0	0	2	1>	17.7	25.8	B	C	D
7	I-15 SB Ramps (NS) at: • El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	20.9	24.0	C	C	D
8	I-15 SB Ramps (NS) at: • Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	25.3	35.3	C	D	E
9	I-15 NB Ramps (NS) at: • El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	36.7	28.8	D	C	D
10	I-15 NB Ramps (NS) at: • Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	28.1	32.3	C	C	E
11	Grand Oaks (NS) at: • Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	14.6	24.1	B	C	D
12	Temescal Cyn. Rd. (NS) at: • Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	35.1	37.9	D	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

2.6 Existing 2009 Conditions Ramp Metering Analysis

A description of the ramp metering analysis methodologies is presented in subsequent Section 4.5 of this report. The existing 2009 conditions ramp metering analysis has been performed based upon the ramp metered lane traffic flow threshold outlined in the Caltrans Ramp Meter Design Manual. The number of required ramp metered lanes is determined based on a threshold of 900 vehicles per hour for each lane. The results of this analysis are summarized in Table 2-2. Table 2-2 indicates that the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lanes
- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane

It should be noted that all the on-ramps currently do not have ramp metering except for the I-15 Northbound On-Ramp at El Cerrito Road where the two-lane on-ramp has a one metered lane and one free-flow lane.

2.7 Existing 2009 Conditions Ramp Merge and Diverge Analyses

Existing 2009 conditions ramp merge and diverge analysis results have been calculated based on the existing number of freeway mainline travel lanes, which are three lanes on the I-15 Freeway. A detailed description of the ramp merge and diverge analysis methodologies is presented in subsequent Section 4.6 of this report. The results of this ramp merge and diverge analysis are summarized in Table 2-3. As expected, Table 2-3 indicates that all of the ramp merging and diverging points are at or exceeding acceptable levels of service with existing geometry. Ramp merge and diverge analysis worksheets for Existing 2009 conditions are included in Appendix 2.4 of this report.

2.8 Existing 2009 Condtions Roadway Link Analysis

Using the methologies defined in Section 4.7 of this report, the existing 2009 roadway link analysis results have been calculated based on the link capacities for each of the General Plan roadway

Table 2-2

Existing 2009 Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	329	633	1
2	I-15 Northbound On-Ramp at El Cerrito Road	654	280	1
3	I-15 Southbound On-Ramp at Cajalco Road	172	430	1
4	I-15 Northbound On-Ramp at Cajalco Road	983	564	2

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

Table 2-3

Existing 2009 Conditions

Freeway Ramp Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15	Southbound	El Cerrito Off-Ramp	Diverge	280	406	3	1	28.6	32.2	F	F
		El Cerrito On-Ramp[2]	Weave	329	633	3+1	1	40.2	47.3	E	F
		Cajalco Off-Ramp[2]	Weave	420	671	3+1	1				
		Cajalco On-Ramp	Merge	172	430	3	1	35.4	40.2	E	F
	Northbound	El Cerrito On-Ramp	Merge	654	280	3	1	40.1	33.6	F	D
		El Cerrito Off-Ramp	Diverge	446	206	3	1	43.1	36.4	F	E
		Cajalco On-Ramp	Merge	983	564	3	1	40.2	35.0	F	E
		Cajalco Off-Ramp	Diverge	146	300	3	1	35.9	35.4	E	E

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

classifications provided by the Estimated 24 hour Traffic (ADT)" of the City of Corona Street Design Table. The Roadway Link Analysis results for Existing 2009 conditions are summarized in Table 2-4. Table 2-4 indicates that out of the total 24 study area roadway segments:

- 18 roadway segments provide "Acceptable" capacity to satisfy daily vehicle traffic demand.
- 3 roadway segments begin to "Approach Capacity" where speed and freedom to maneuver are severely restricted at certain times of the day.
- 3 roadway segments "Potentially Exceed Capacity" or "Exceed Capacity" creating potential vehicle delays particularly during the peak hours.

2.9 General Plan Circulation Element

Exhibit 2-5 shows the Riverside County General Plan Circulation Element and Exhibit 2-6 illustrates the City of Corona typical arterial street cross-sections.

As shown on Exhibit 2-5, Cajalco Road east of Bedford Canyon Road is classified as an ultimate 6-Lane Major Arterial roadway (130-foot right-of-way). Bedford Canyon Road is classified as a Divided Collector roadway (76-foot right-of-way). El Cerrito Road and Eagle Glen Parkway west of Bedford Canyon Road are classified as ultimate 4-Lane Secondary roadways (88-foot right-of-way). Masters Drive, California Avenue and Bennett Avenue are classified as Collector roadway (68-foot right-of-way). Temescal Canyon Road is classified as an ultimate 4-Lane Major Arterial roadway (106-foot right-of-way).

2.10 Transit Service

Eagle Glen Parkway adjacent to the project site is currently not served by the Riverside Transit Agency (RTA) or the Corona Cruisers bus services. However, Temescal Canyon Road north of Cajalco Road is currently served by the Corona Cruisers Red Line.

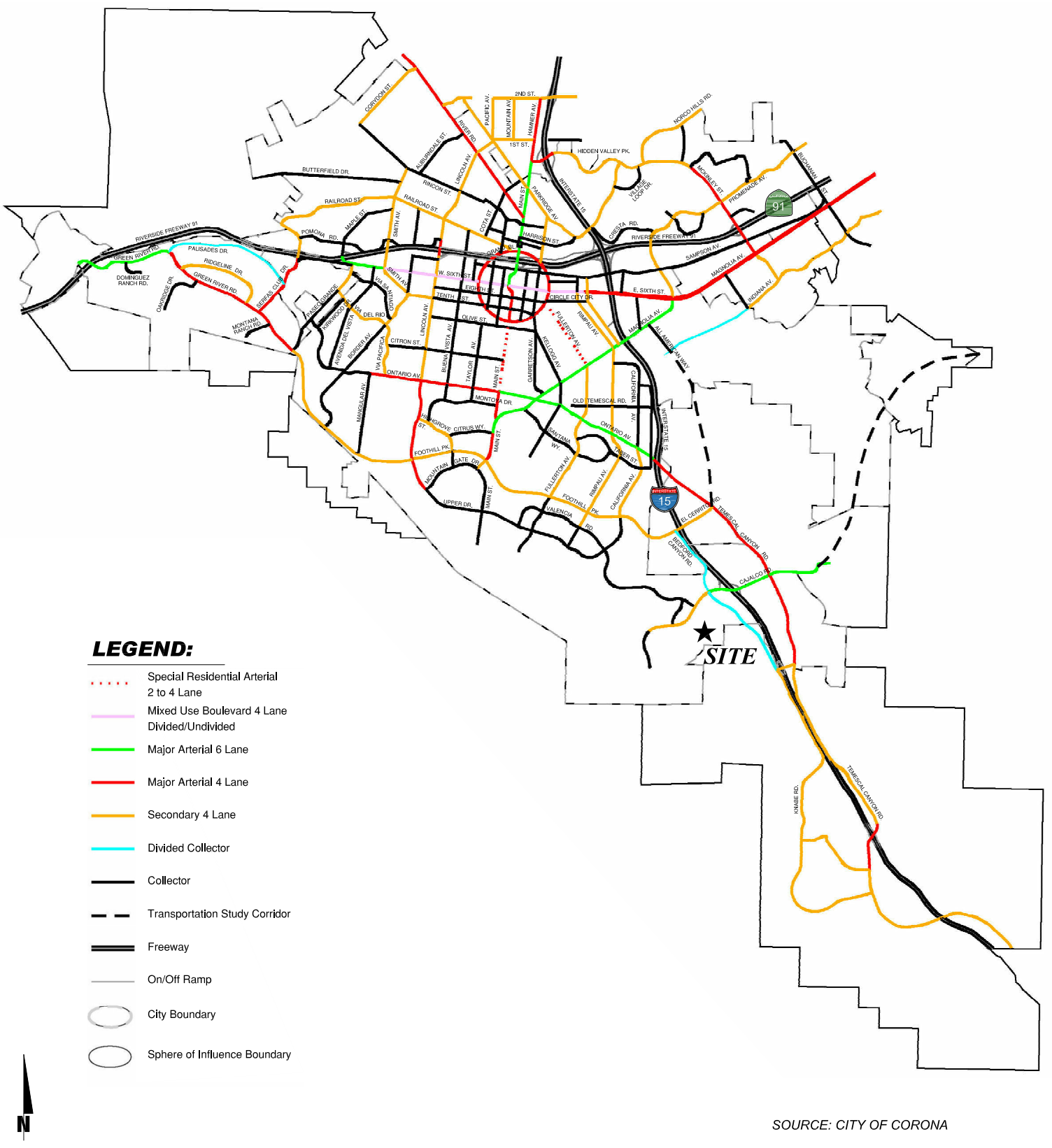
Table 2-4

Existing 2009 Conditions
Roadway Link Capacity Analysis

Roadway	Segment	Existing Roadway Section	Existing Roadway Capacity	2009 Traffic Volume	Volume/ Capacity Ratio	2009 Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Dr.	2	10,000	4,500	0.45	Acceptable
	South of California Dr.	2	10,000	7,800	0.78	Acceptable
	North of Bennett Av.	2	10,000	5,400	0.54	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	5,900	0.59	Acceptable
Bennett Av.	North of Masters Dr.	2	10,000	900	0.09	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,400	0.14	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	6,000	0.60	Acceptable
	North of Georgetown Dr.	2	10,000	5,900	0.59	Acceptable
	North of Eagle Glen Pkwy.	4	20,000	6,000	0.30	Acceptable
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	10,400	0.52	Acceptable
	South of Cajalco Rd.	4	20,000	13,000	0.65	Acceptable
California Dr.	West of Masters Dr.	2	10,000	4,100	0.41	Acceptable
	East of Masters Dr.	2	10,000	8,300	0.83	Approaching Capacity
El Cerrito Rd.	West of Bedford Cyn.	2	10,000	19,200	1.92	Exceeds Capacity
	East of Bedford Cyn.	4	20,000	19,400	0.97	Approaching Capacity
	East of I-15 NB Ramps	4	20,000	8,500	0.43	Acceptable
Georgetown Dr.	West of Bedford Cyn.	2	10,000	2,200	0.22	Acceptable
Eagle Glen Pkwy./ Cajalco Rd.	West of Masters Dr.	4	20,000	7,700	0.39	Acceptable
	West of Bedford Cyn.	4	20,000	11,000	0.55	Acceptable
	East of Bedford Cyn.	4	20,000	17,300	0.87	Approaching Capacity
	East of I-15 SB Ramps	2	10,000	18,500	1.85	Exceeds Capacity
	East of I-15 NB Ramps	6	50,000	12,300	0.25	Acceptable
	East of Grand Oaks	6	50,000	11,500	0.23	Acceptable
	East of Temescal Cyn. Rd.	2	10,000	10,900	1.09	Potentially Exceeds Capacity

EXHIBIT 2-5

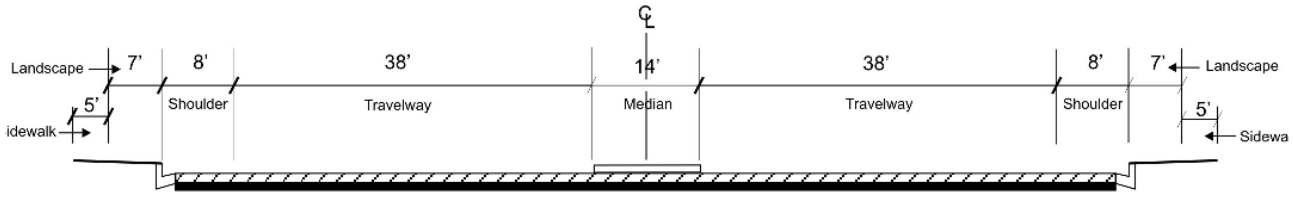
CITY OF CORONA
GENERAL PLAN CIRCULATION ELEMENT



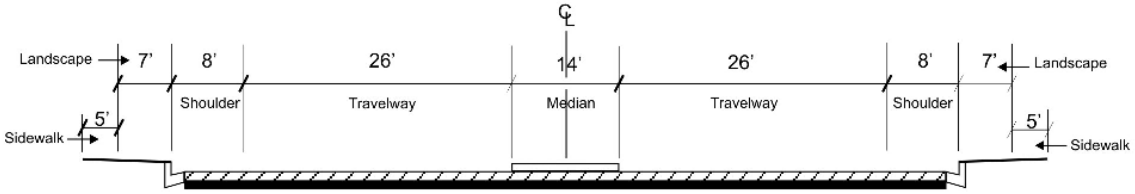
SOURCE: CITY OF CORONA

EXHIBIT 2-6 (1 OF 3)

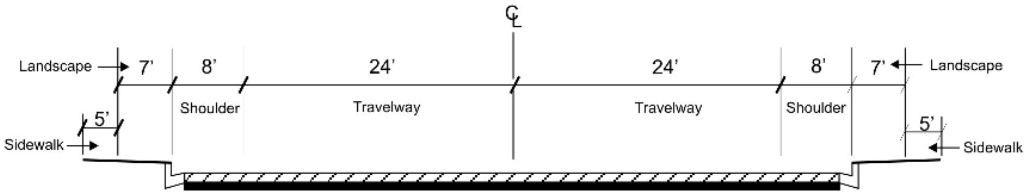
CITY OF CORONA
GENERAL PLAN ROADWAY CROSS-SECTIONS



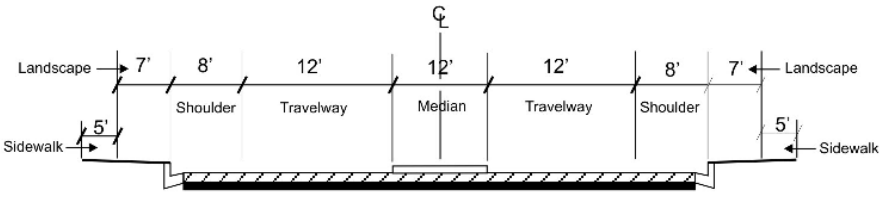
Major Arterial (6 lanes)
R.W. 130
Roadway 106



Major Arterial (4 lanes)
R.W. 106
Roadway 82



Secondary (4 lanes)
R.W. 88
Roadway 64

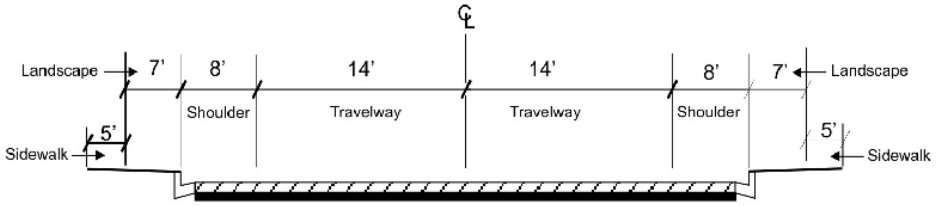


Divided Collector (2 lanes)
R.W. 76
Roadway 52

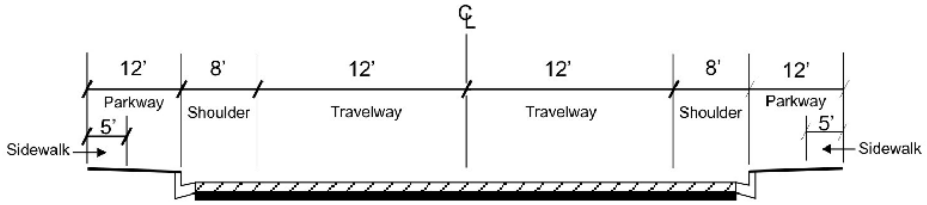
SOURCE: CITY OF CORONA

EXHIBIT 2-6 (2 OF 3)

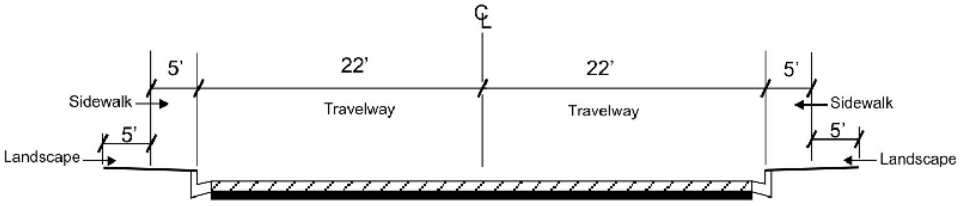
CITY OF CORONA
GENERAL PLAN ROADWAY CROSS-SECTIONS



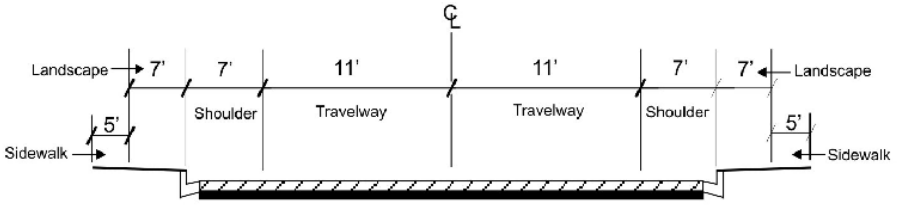
Collector (2 lanes)
R.W. 68
Roadway 44



Local Street
R.W. 64
Roadway 40
Note: See local residential street Planning Policy 6.1.10



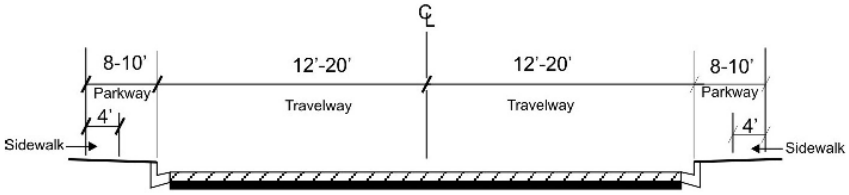
Local Industrial
R.W. 64
Roadway 44



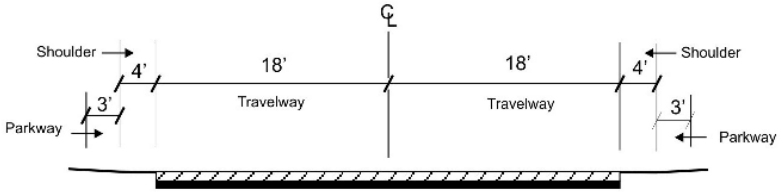
Cul-De-Sac
R.W. 60
Roadway 36

SOURCE: CITY OF CORONA

CITY OF CORONA
GENERAL PLAN ROADWAY CROSS-SECTIONS



Private Residential Street
R.W. 40-60
Roadway 24-40
Note: See local residential street Planning Policy 6.1.10



Rural Road (Traffic Volume)
R.W. 50
Roadway 36
Note: See local residential street Planning Policy 6.1.10

SOURCE: CITY OF CORONA

3.0 PROJECTED FUTURE TRAFFIC

Projected future traffic has been estimated for near-term (2014 and 2019) conditions and long-range (2035) conditions. Future 2014 and 2019 traffic are represented by the combination of existing traffic, ambient growth and project traffic. The long-range 2035 traffic forecast is based on the City of Corona traffic model. This section discusses how projected future traffic from these various sources has been determined.

3.1 Project Traffic

3.1.1 Project Trip Generation

Trip generation represents the amount of traffic which is attracted to and produced by a development. The trip generation for the project is based upon the specific land uses which have been planned for this development. For the purposes of this analysis, the following land use assumptions have been evaluated for the project site:

- 549 single-family detached dwelling units
- 1,072 multi-family attached dwelling units
- 4 acres of passive park
- 11 acres of active park
- 59,000 square feet of general office use
- 230,900 square feet of business park use
- 59,000 square feet of specialty retail use
- 396,400 square feet of shopping center use

Trip generation rates for the proposed project are shown in Table 3-1. The trip generation rates are based upon data from the following various sources:

- Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 8th Edition, 2008.
- San Diego Association of Governments (SANDAG) *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002.

Table 3-1

Project Trip Generation Rates[1]

No.	Land Use	ITE Code	Units[2]	Peak Hour Trip Rates						Daily
				AM			PM			
				In	Out	Total	In	Out	Total	
1	Single Family Detached Homes	210	DU	0.19	0.56	0.75	0.64	0.37	1.01	9.57
2	Apartments	220	DU	0.10	0.41	0.51	0.40	0.22	0.62	6.65
3	Multi-Family Attached Residential	230	DU	0.07	0.37	0.44	0.35	0.17	0.52	5.81
4	Senior Residential (Attached)	251	DU	0.05	0.08	0.13	0.10	0.06	0.16	3.48
5	Passive Park	--[3]	AC	0.11	0.10	0.21	0.07	0.07	0.14	1.59
6	Active Park	--[4]	AC	0.88	0.74	1.62	2.35	2.35	4.70	41.76
7	General Office	710	TSF	1.83	0.25	2.08	0.42	2.04	2.46	15.06
8	Business Park	770	TSF	1.20	0.23	1.43	0.30	0.99	1.29	12.76
9	Specialty Retail[5]	814	TSF	0.72	0.48	1.20	1.19	1.52	2.71	44.32
10	Shopping Center (396.4 TSF)	820	TSF	0.53	0.34	0.87	1.98	2.06	4.04	41.94
11	New Car Sales	841	TSF	1.50	0.53	2.03	1.01	1.58	2.59	33.34

1 Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 8th Edition, 2008.

2 DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

3 Source for AM and PM peak hour percentages of daily and AM/PM in and out splits: (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002. Daily trip rate is per the ITE Trip Generation Manual.

4 Source: Laguna Hills Community Center Park Growth Management/CMP Traffic Analysis (1997, RKJK and Associates, Inc.)

5 Source for AM peak hour percentage of daily and in/out split: (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002. AM peak hour rates unavailable in the ITE Trip Generation Manual.

- Laguna Hills Community Center Park Growth Management/CMP Traffic Analysis, RKJK and Associates, Inc., 1997.

The Project Phase 1 (2014) overall trip generation summary is shown in Table 3-2. As shown on Table 3-2, Phase 1 of the project is anticipated to generate approximately 11,721 external trips per day with 971 AM peak hour external trips and 1,128 PM peak hour external trips. Internal capture reduction is applied to the project trips to account for traffic interaction between different planning areas with various land uses within the overall Specific Plan project site for Project Phase 1 conditions. Internal capture rates are based on the ITE Trip Generation Handbook (2nd Edition). Table 3-3, 3-4 and 3-5 shows the internal capture percentage for each project land use for Phase 1 daily, AM and PM peak hour traffic conditions, respectively. Table 3-6 summarizes the external trip generation by planning area for Project Phase 1 (2014) conditions.

The Project Buildout (2019) overall trip generation summary is shown in Table 3-7. As shown on Table 3-7, Buildout of the project is anticipated at 2019 to generate approximately 29,517 external trips per day with 1,644 AM peak hour external trips and 2,841 PM peak hour external trips. Internal capture reduction is applied to the project trips to account for traffic interaction between different planning areas with various land uses within the overall Specific Plan project site for Project Buildout conditions. Table 3-8, 3-9 and 3-10 shows the internal capture percentage for each project land use for Project Buildout daily, AM and PM peak hour traffic conditions, respectively. Table 3-11 summarizes the external trip generation by planning area for Project Buildout (2019) conditions.

3.1.2 Project Trip Distribution

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of employment, commercial and recreational opportunities and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating existing and proposed land uses and highways within the community and existing traffic volumes. Trip distribution for this study has been based upon those highway facilities which are either in place or will be constructed in conjunction with other future developments by the analysis

Table 3-2

Phase 1 (2014) Arantine Hills Specific Plan
Trip Generation Summary

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
8	Active Park	11.0 AC	10	8	18	26	26	52	459
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Specialty Retail	59.0 TSF	42	28	70	70	90	160	2,615
	General Office	59.0 TSF	108	15	123	25	120	145	889
	Subtotal		***182***	***210***	***392***	***253***	***287***	***540***	***6,124***
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
Grand Total			**537**	**498**	**1,035**	**598**	**682**	**1,280**	**13,348**
Internal Capture Total[2]			***32***	***32***	***64***	***76***	***76***	***152***	***1,627***
External Total[2]			**505**	**466**	**971**	**522**	**606**	**1,128**	**11,721**

[1] DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

[2] Information obtained from Tables 3-3, 3-4 and 3-5.

Table 3-3

Phase 1 (2014) Arantine Hills Specific Plan
Internal and External Daily Vehicle Trip Generation Characteristics

Land Use	Vehicle Trip Ends			
	Daily Trip Ends	Percent Internal Capture	Internal Trip Ends	External Trip Ends
Single Family Detached Homes	2,966	12%	356	2,610
Multi-Family Attached Residential	3,468	12%	416	3,052
Passive Park	5	70%	4	1
Active Park	459	50%	230	229
General Office	889	7%	62	827
Business Park	2,946	7%	206	2,740
Specialty Retail	2,615	13%	353	2,262
Total	**13,348**	**12%**	**1,627**	**11,721**

Trip Summary		
Internal	814	6%
External	11,721	94%
Total	**12,535**	**100%**

Table 3-4

Phase 1 (2014) Arantine Hills Specific Plan
Internal and External AM Peak Hour Vehicle Trip Generation Characteristics

Land Use	AM Peak Hour Trip Ends										
	AM Total			AM Internal					AM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	58	173	231	4%	5%	2	9	11	56	164	220
Multi-Family Attached Residential	42	221	263	4%	5%	2	11	13	40	210	250
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	10	8	18	50%	50%	5	4	9	5	4	9
General Office	108	15	123	5%	7%	5	1	6	103	14	117
Business Park	277	53	330	5%	7%	14	4	18	263	49	312
Specialty Retail	42	28	70	10%	11%	4	3	7	38	25	63
Total	**537**	**498**	**1,035**	**6%**	**6%**	**32**	**32**	**64**	**505**	**466**	**971**

Trip Summary		
Internal	32	3%
External	971	97%
Total	**1,003**	**100%**

Table 3-5

Phase 1 (2014) Arantine Hills Specific Plan
Internal and External PM Peak Hour Vehicle Trip Generation Characteristics

Land Use	PM Peak Hour Trip Ends										
	PM Total			PM Internal					PM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	199	115	314	12%	12%	24	14	38	175	101	276
Multi-Family Attached Residential	209	102	311	12%	12%	25	12	37	184	90	274
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	26	26	52	50%	50%	13	13	26	13	13	26
General Office	25	120	145	7%	8%	2	10	12	23	110	133
Business Park	69	229	298	7%	8%	5	18	23	64	211	275
Specialty Retail	70	90	160	10%	10%	7	9	16	63	81	144
Total	**598**	**682**	**1,280**	**13%**	**11%**	**76**	**76**	**152**	**522**	**606**	**1,128**

Trip Summary		
Internal	76	6%
External	1,128	94%
Total	**1,204**	**100%**

Table 3-6

Phase 1 (2014) Arantine Hills Specific Plan
External Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
	Internal Capture[2]		-	3	3	6	3	9	102
	Total		***10***	***51***	***61***	***45***	***22***	***67***	***746***
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
	Internal Capture[2]		1	4	5	10	6	16	154
	Total		***24***	***71***	***95***	***76***	***44***	***120***	***1,128***
8	Active Park	11.0 AC	10	8	18	26	26	52	459
	Internal Capture[2]		5	4	9	13	13	26	230
	Total		***5***	***4***	***9***	***13***	***13***	***26***	***229***
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
	Internal Capture[2]		-	-	-	-	-	-	1
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
	Internal Capture[2]		1	3	4	7	4	11	103
	Total		***16***	***47***	***63***	***51***	***29***	***80***	***758***
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
	Internal Capture[2]		1	2	3	7	4	11	99
	Total		***15***	***46***	***61***	***48***	***28***	***76***	***724***
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
	Internal Capture[2]		-	-	-	-	-	-	2
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Internal Capture[2] (Multi-Family Residential)		1	8	9	19	9	28	314
	Specialty Retail	59.0 TSF	42	28	70	70	90	160	2,615
	Internal Capture[2] (Specialty Retail)		4	3	7	7	9	16	353
	General Office	59.0 TSF	108	15	123	25	120	145	889
	Internal Capture[2] (General Office)		5	1	6	2	10	12	62
	Subtotal - Internal Capture[2]		***10***	***12***	***22***	***28***	***28***	***56***	***729***
	Total		***172***	***198***	***370***	***225***	***259***	***484***	***5,395***
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
	Internal Capture[2]		14	4	18	5	18	23	206
	Total		***263***	***49***	***312***	***64***	***211***	***275***	***2,740***
Grand Total			**537**	**498**	**1,035**	**598**	**682**	**1,280**	**13,348**
Internal Capture Total[2]			***32***	***32***	***64***	***76***	***76***	***152***	***1,626***
External Total			**505**	**466**	**971**	**522**	**606**	**1,128**	**11,722**

1 DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

2 Internal capture based upon percentages identified in the ITE Trip Generation Handbook (2nd Edition), as presented on Tables 3-3, 3-4 and 3-5.

Table 3-7

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Trip Generation Summary

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
1	Single Family Detached Homes	60 DU	11	34	45	38	22	60	574
2	Single Family Detached Homes	28 DU	5	16	21	18	10	28	268
3	Passive Park	1.0 AC	-	-	-	-	-	-	2
4	Single Family Detached Homes	103 DU	20	58	78	66	38	104	986
5	Single Family Detached Homes	48 DU	9	27	36	31	18	49	459
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
8	Active Park	11.0 AC	10	8	18	26	26	52	459
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Specialty Retail	59 TSF	42	28	70	70	90	160	2,615
	General Office	59 TSF	108	15	123	25	120	145	889
	Subtotal		***182***	***210***	***392***	***253***	***287***	***540***	***6,124***
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
15	Shopping Center	396.4 TSF	210	135	345	785	817	1,602	16,625
16	Multi-Family Residential	475 DU	33	176	209	166	81	247	2,760
Grand Total			**825**	**944**	**1,769**	**1,702**	**1,668**	**3,370**	**35,022**
Internal Capture Total [2]			***62***	***63***	***125***	***266***	***263***	***529***	***5,505***
External Total[2]			**763**	**881**	**1,644**	**1,436**	**1,405**	**2,841**	**29,517**

[1] DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

[2] Information obtained from Tables 3-8, 3-9 and 3-10.

Table 3-8

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Internal and External Daily Vehicle Trip Generation Characteristics

Land Use	Vehicle Trip Ends			
	Daily Trip Ends	Percent Internal Capture	Internal Trip Ends	External Trip Ends
Single Family Detached Homes	5,253	17%	898	4,355
Multi-Family Attached Residential	6,228	17%	1,064	5,164
Passive Park	7	70%	5	2
Active Park	459	50%	230	229
General Office	889	19%	165	724
Business Park	2,946	19%	546	2,400
Specialty Retail	2,615	13%	353	2,262
Shopping Center	16,625	13%	2,244	14,381
Total	**35,022**	**16%**	**5,505**	**29,517**

Trip Summary		
Internal	2,753	9%
External	29,517	91%
TOTAL	**32,270**	**100%**

Table 3-9

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Internal and External AM Peak Hour Vehicle Trip Generation Characteristics

Land Use	AM Peak Hour Trip Ends										
	AM Total			AM Internal					AM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	103	308	411	6%	5%	6	15	21	97	293	390
Multi-Family Attached Residential	75	397	472	6%	5%	5	20	25	70	377	447
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	10	8	18	50%	50%	5	4	9	5	4	9
General Office	108	15	123	6%	12%	6	2	8	102	13	115
Business Park	277	53	330	6%	12%	17	6	23	260	47	307
Specialty Retail	42	28	70	9%	10%	4	3	7	38	25	63
Shopping Center	210	135	345	9%	10%	19	13	32	191	122	313
Total	**825**	**944**	**1,769**	**8%**	**7%**	**62**	**63**	**125**	**763**	**881**	**1,644**

Trip Summary		
Internal	63	4%
External	1,644	96%
Total	**1,707**	**100%**

Table 3-10

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Internal and External PM Peak Hour Vehicle Trip Generation Characteristics

Land Use	PM Peak Hour Trip Ends										
	PM Total			PM Internal					PM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	352	203	555	19%	21%	67	43	110	285	160	445
Multi-Family Attached Residential	375	183	558	19%	21%	71	38	109	304	145	449
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	26	26	52	50%	50%	13	13	26	13	13	26
General Office	25	120	145	22%	12%	6	14	20	19	106	125
Business Park	69	229	298	22%	12%	15	27	42	54	202	256
Specialty Retail	70	90	160	11%	16%	8	14	22	62	76	138
Shopping Center	785	817	1,602	11%	14%	86	114	200	699	703	1,402
Total	**1,702**	**1,668**	**3,370**	**16%**	**16%**	**266**	**263**	**529**	**1,436**	**1,405**	**2,841**

Trip Summary		
Internal	265	9%
External	2,841	91%
Total	**3,106**	**100%**

Table 3-11
(1 of 2)

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
External Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
1	Single Family Detached Homes	60 DU	11	34	45	38	22	60	574
	Internal Capture[2]		*1*	*2*	*3*	*7*	*5*	*12*	*98*
	Total		***10***	***32***	***42***	***31***	***17***	***48***	***476***
2	Single Family Detached Homes	28 DU	5	16	21	18	10	28	268
	Internal Capture[2]		-	*1*	*1*	*3*	*2*	*5*	*46*
	Total		***5***	***15***	***20***	***15***	***8***	***23***	***222***
3	Passive Park	1.0 AC	-	-	-	-	-	-	2
	Internal Capture[2]		-	-	-	-	-	-	*1*
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
4	Single Family Detached Homes	103 DU	20	58	78	66	38	104	986
	Internal Capture[2]		*1*	*3*	*4*	*13*	*8*	*21*	*168*
	Total		***19***	***55***	***74***	***53***	***30***	***83***	***818***
5	Single Family Detached Homes	48 DU	9	27	36	31	18	49	459
	Internal Capture[2]		*1*	*1*	*2*	*6*	*4*	*10*	*78*
	Total		***8***	***26***	***34***	***25***	***14***	***39***	***381***
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
	Internal Capture[2]		*1*	*3*	*4*	*10*	*5*	*15*	*145*
	Total		***9***	***51***	***60***	***41***	***20***	***61***	***703***
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
	Internal Capture[2]		*2*	*4*	*6*	*16*	*11*	*27*	*219*
	Total		***23***	***71***	***94***	***70***	***39***	***109***	***1,063***
8	Active Park	11.0 AC	10	8	18	26	26	52	459
	Internal Capture[2]		*5*	*4*	*9*	*13*	*13*	*26*	*230*
	Total		***5***	***4***	***9***	***13***	***13***	***26***	***229***
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
	Internal Capture[2]		-	-	-	-	-	-	*1*
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
	Internal Capture[2]		*1*	*3*	*4*	*11*	*7*	*18*	*147*
	Total		***16***	***47***	***63***	***47***	***26***	***73***	***714***
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
	Internal Capture[2]		*1*	*2*	*3*	*10*	*7*	*17*	*141*
	Total		***15***	***46***	***61***	***45***	***25***	***70***	***682***

Table 3-11
(2 of 2)

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
External Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
	Internal Capture[2]		-	-	-	-	-	-	*2*
	Total		**-**	**-**	**-**	**-**	**-**	**-**	***1***
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Internal Capture[2] (Multi-Family Residential)		*2*	*8*	*10*	*30*	*16*	*46*	*448*
	Specialty Retail	59.0 TSF	42	28	70	70	90	160	2,615
	Internal Capture[2] (Specialty Retail)		*4*	*3*	*7*	*8*	*14*	*22*	*353*
	General Office	59.0 TSF	108	15	123	25	120	145	889
	Internal Capture[2] (General Office)		*6*	*2*	*8*	*6*	*14*	*20*	*165*
	Subtotal - Internal Capture[2]		***12***	***13***	***25***	***44***	***44***	***88***	***966***
	Total		**170**	**197**	**367**	**209**	**243**	**452**	**5,158**
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
	Internal Capture[2]		*17*	*6*	*23*	*15*	*27*	*42*	*546*
	Total		***260***	***47***	***307***	***54***	***202***	***256***	***2,400***
15	Shopping Center	396.4 TSF	210	135	345	785	817	1,602	16,625
	Internal Capture[2]		*19*	*13*	*32*	*86*	*114*	*200*	*2,244*
	Pass-by/Diverted Trip Reduction[3]	*19%*	*-*	*-*	*-*	*-133*	*-134*	*-267*	*-2,732*
	Total		***191***	***122***	***313***	***699***	***703***	***1,402***	***14,381***
16	Multi-Family Attached Residential	475 DU	33	176	209	166	81	247	2,760
	Internal Capture[2]		*2*	*9*	*11*	*32*	*17*	*49*	*472*
	Total		***31***	***167***	***198***	***134***	***64***	***198***	***2,288***
Grand Total			**825**	**944**	**1,769**	**1,702**	**1,668**	**3,370**	**35,022**
Internal Capture[2] Total			**63**	**64**	**127**	**266**	**264**	**530**	**5,504**
External Total			**762**	**880**	**1,642**	**1,436**	**1,404**	**2,840**	**29,518**
Pass-By/Diverted Trip Reduction (19%)[3]			**-**	**-**	**-**	**-133**	**-134**	**-267**	**-2,732**
External Total (Less Pass-By/Diverted Trips)			**762**	**880**	**1,642**	**1,303**	**1,270**	**2,573**	**26,786**

1 DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

2 Internal capture based upon percentages identified in the ITE Trip Generation Handbook (2nd Edition), as presented on Tables 3-8, 3-9 and 3-10.

3 Source for pass-by and diverted trip reduction: ITE Trip Generation Handbook, 2nd Edition, June 2004. Average pass-by trip reduction of 19% for the 3 study cases in California. Only applicable to PA 15. These trips will be manually added back to the intersections of Bedford Canyon Road at Eagle Glen Parkway and at the I-15 Freeway ramps on Cajalco Road.

year. The project trip distribution patterns for the proposed Arantine Hills Specific Plan project, as approved by the City of Corona, are shown on the following exhibits for the respective land uses:

- Exhibit 3-1 – Residential uses and parks
- Exhibit 3-2 – Specialty retail, office, and business park uses
- Exhibit 3-3 – Shopping center use (Phase 2 only)

3.1.3 Modal Split

The traffic-reducing potential of public transit has not been considered in this report. Essentially the traffic projections are "conservative" in that public transit might be able to reduce the traffic volumes.

3.1.4 Project Trip Assignment

The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distribution, and the arterial highway and local street systems which would be in place for each project phase.

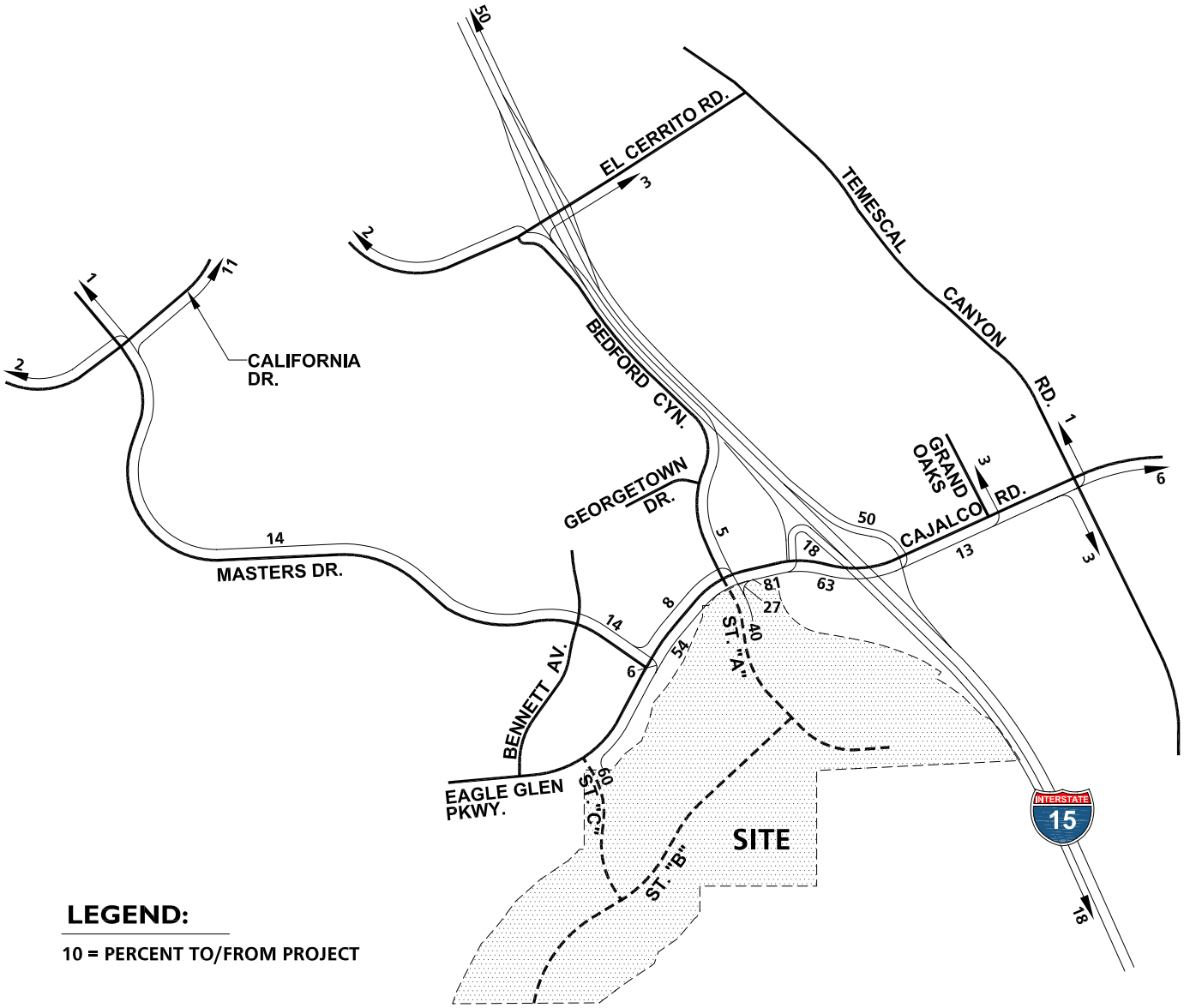
Based on the identified project traffic generation and distribution, the external Project Phase 1 (2014) AM and PM peak hour intersection traffic volumes are shown on Exhibits 3-4 and 3-5, respectively. Project Phase 1 (2014) average daily traffic volumes are shown on Exhibit 3-6.

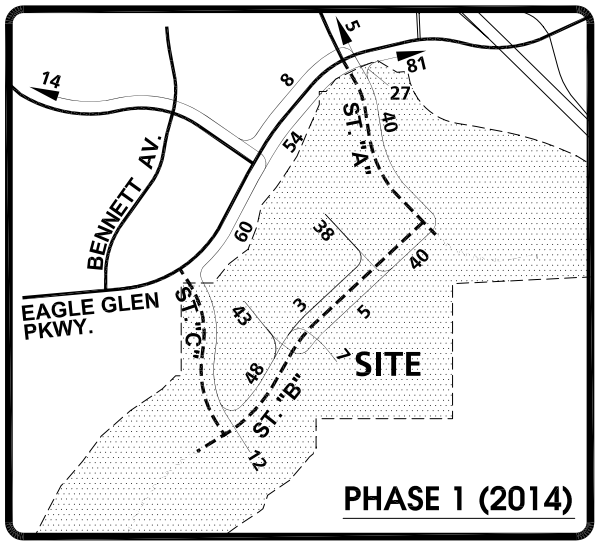
For Phase Buildout (2019) conditions, the external project-only AM and PM peak hour intersection traffic volumes are shown on Exhibits 3-7 and 3-8, respectively. Project Buildout (2019) average daily traffic volumes are shown on Exhibit 3-9.

The PM peak hour pass-by and diverted trips are shown on Exhibit 3-10 for Phase 2 (2019) conditions with the Shopping Center use.

EXHIBIT 3-1

RESIDENTIAL / PARKS EXTERNAL TRIP DISTRIBUTION





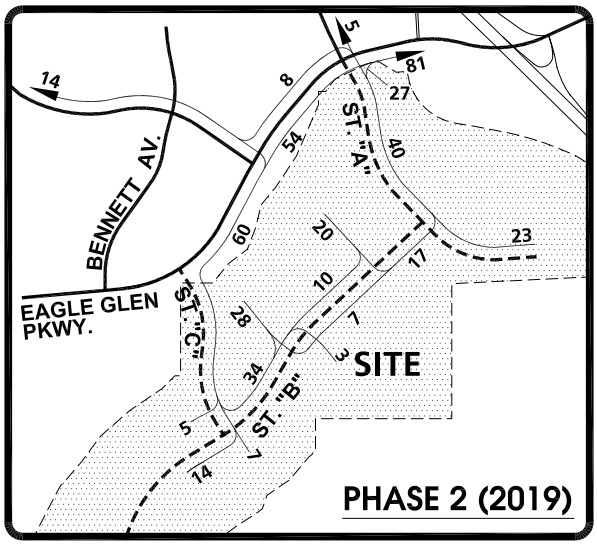
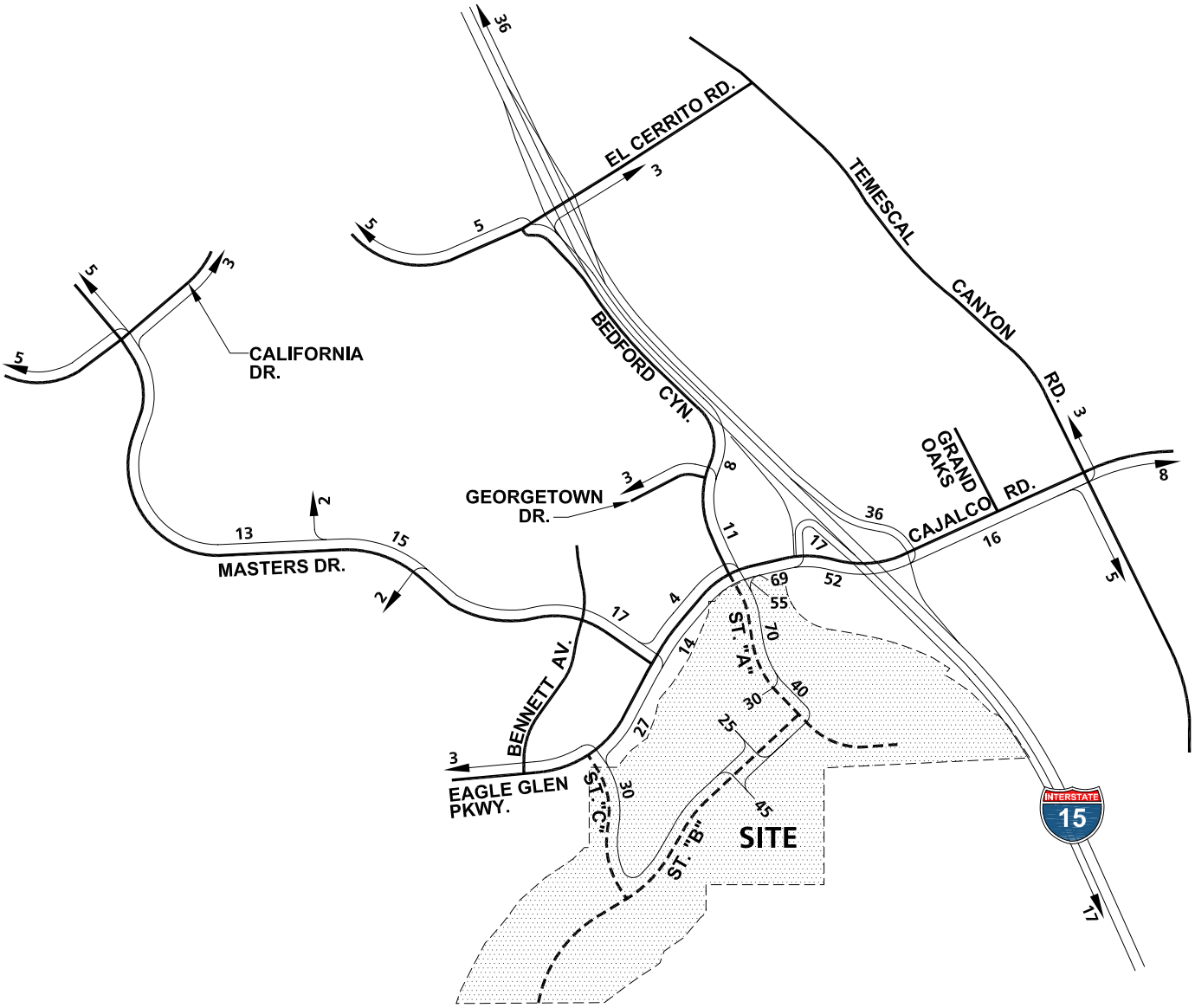


EXHIBIT 3-2

SPECIALTY RETAIL / OFFICE / BUSINESS PARK EXTERNAL TRIP DISTRIBUTION



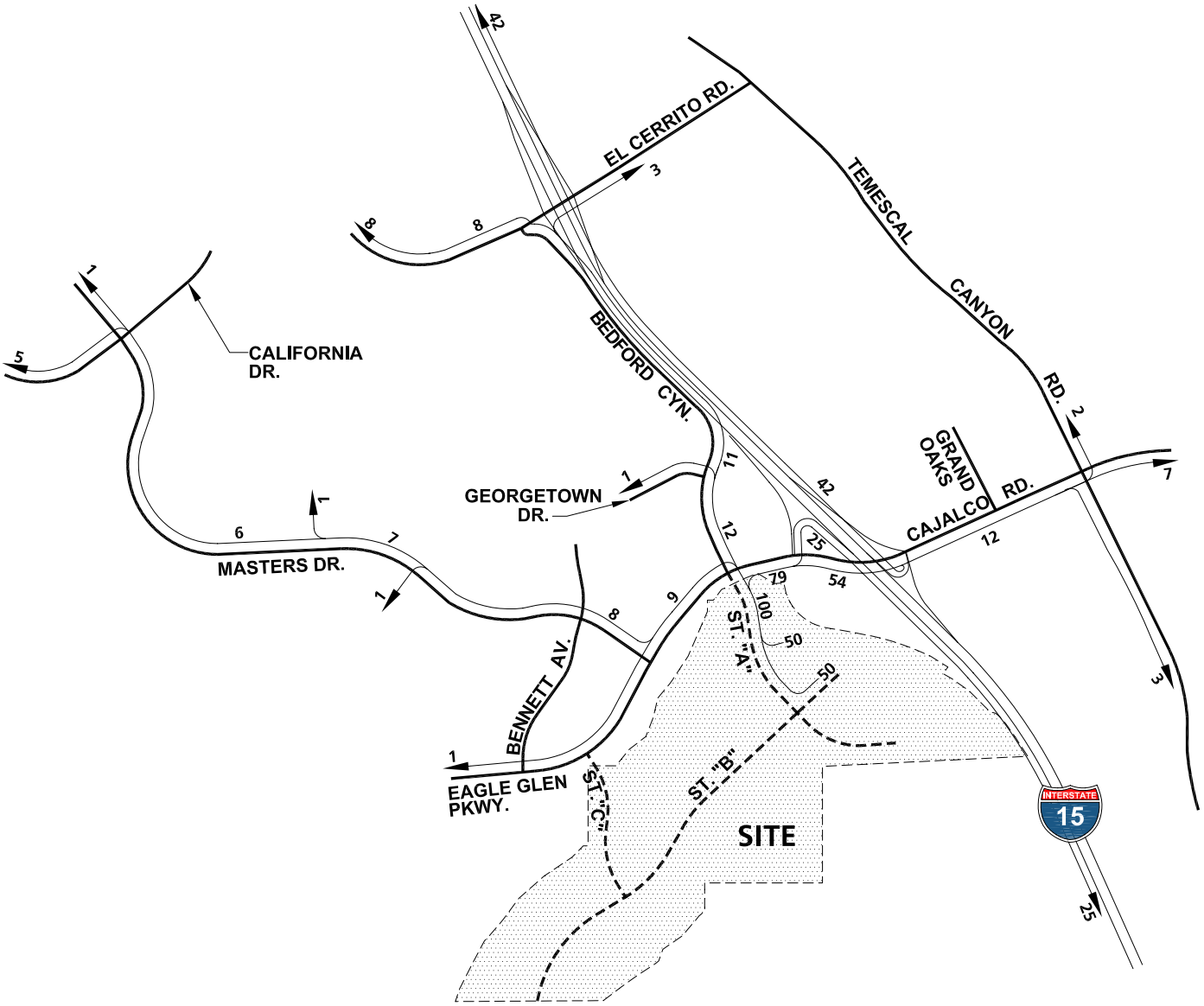
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT 3-3

SHOPPING CENTER
EXTERNAL TRIP DISTRIBUTION (PHASE 2 ONLY - 2019)



LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT 3-4

PHASE 1 (2014) PROJECT ONLY AM PEAK HOUR INTERSECTION VOLUMES

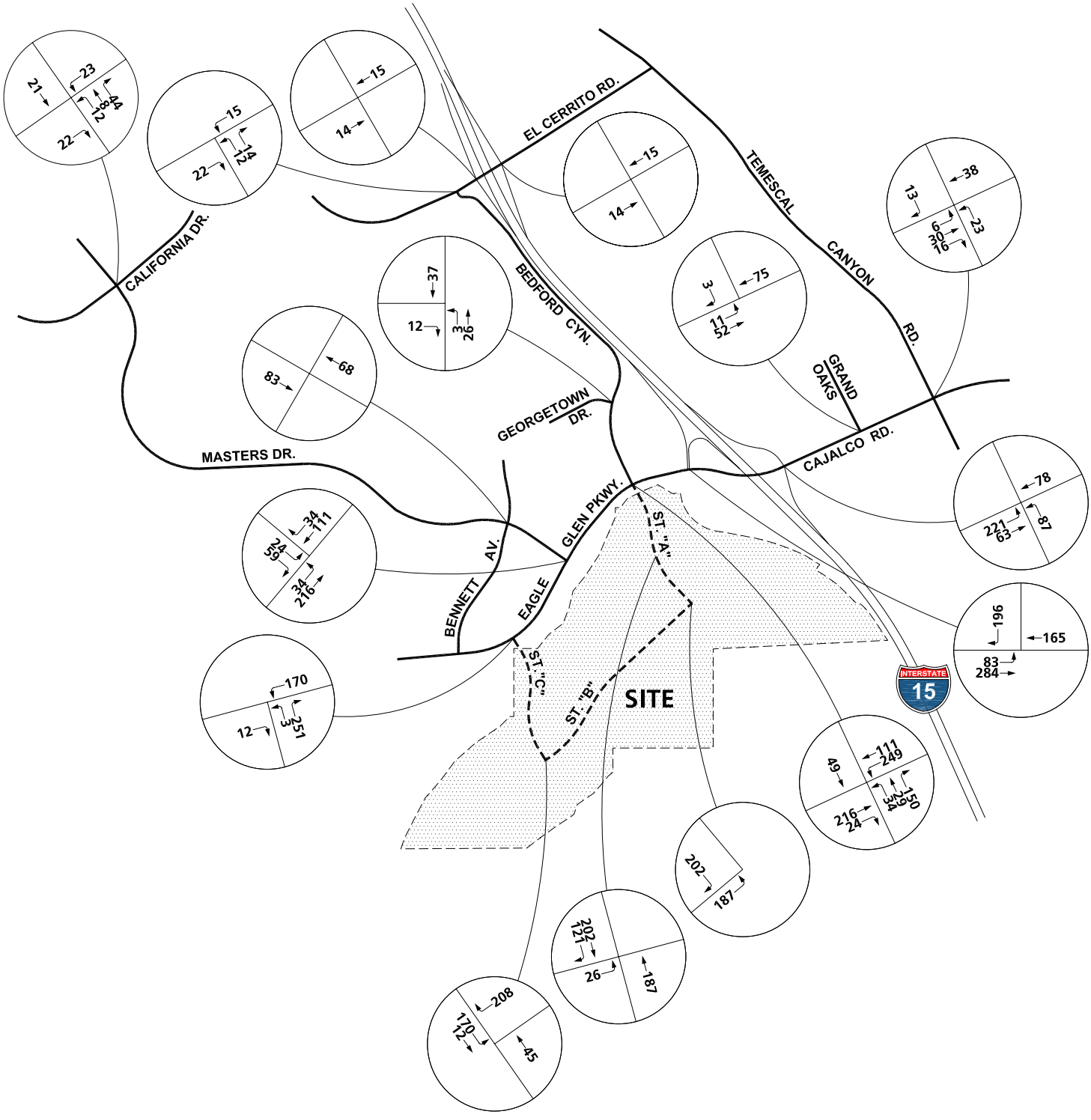


EXHIBIT 3-5

PHASE 1 (2014) PROJECT ONLY
PM PEAK HOUR INTERSECTION VOLUMES

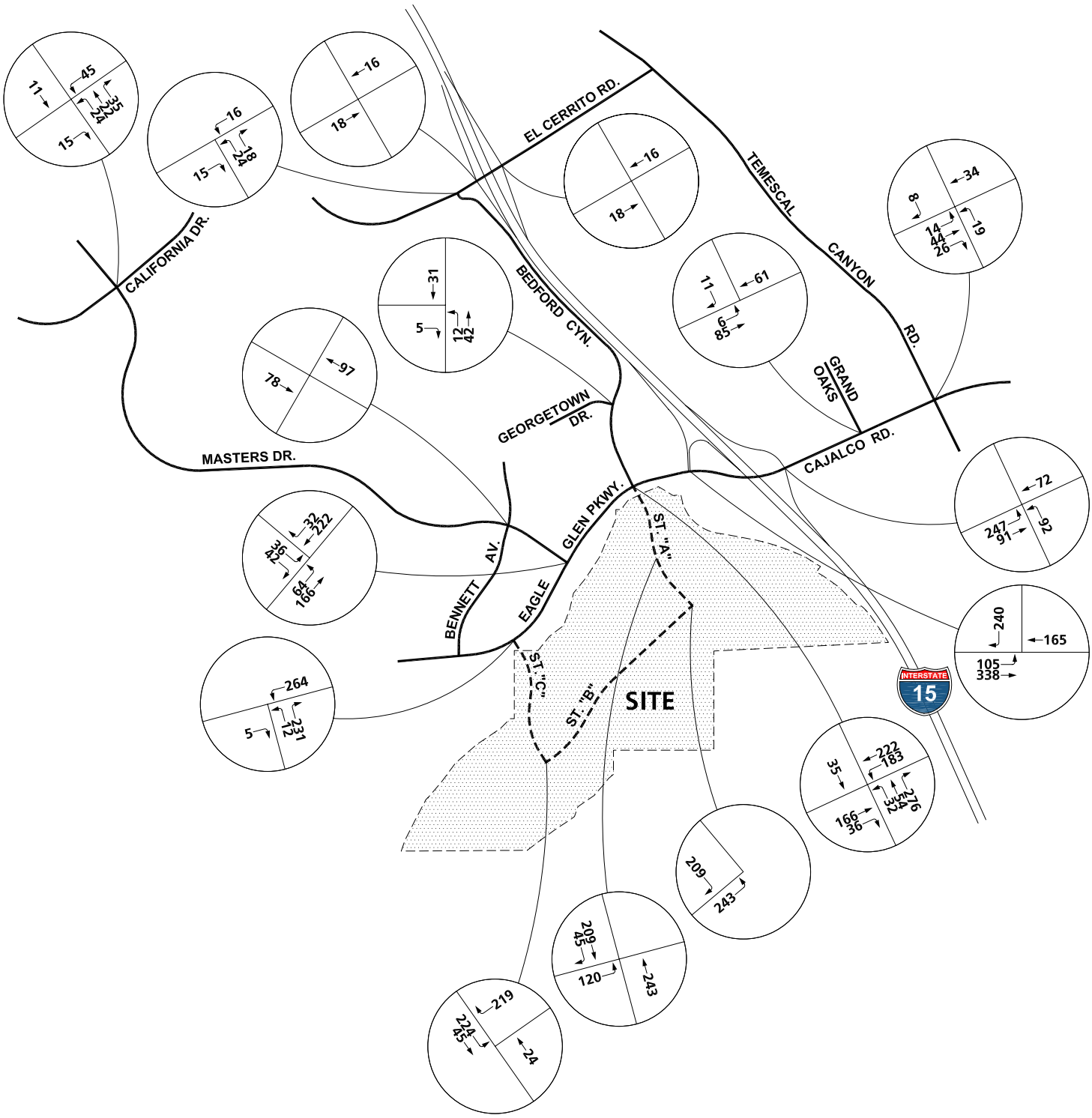


EXHIBIT 3-6

PROJECT PHASE 1 (2014) AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 3-7

PHASE 2 (2019) PROJECT ONLY AM PEAK HOUR INTERSECTION VOLUMES

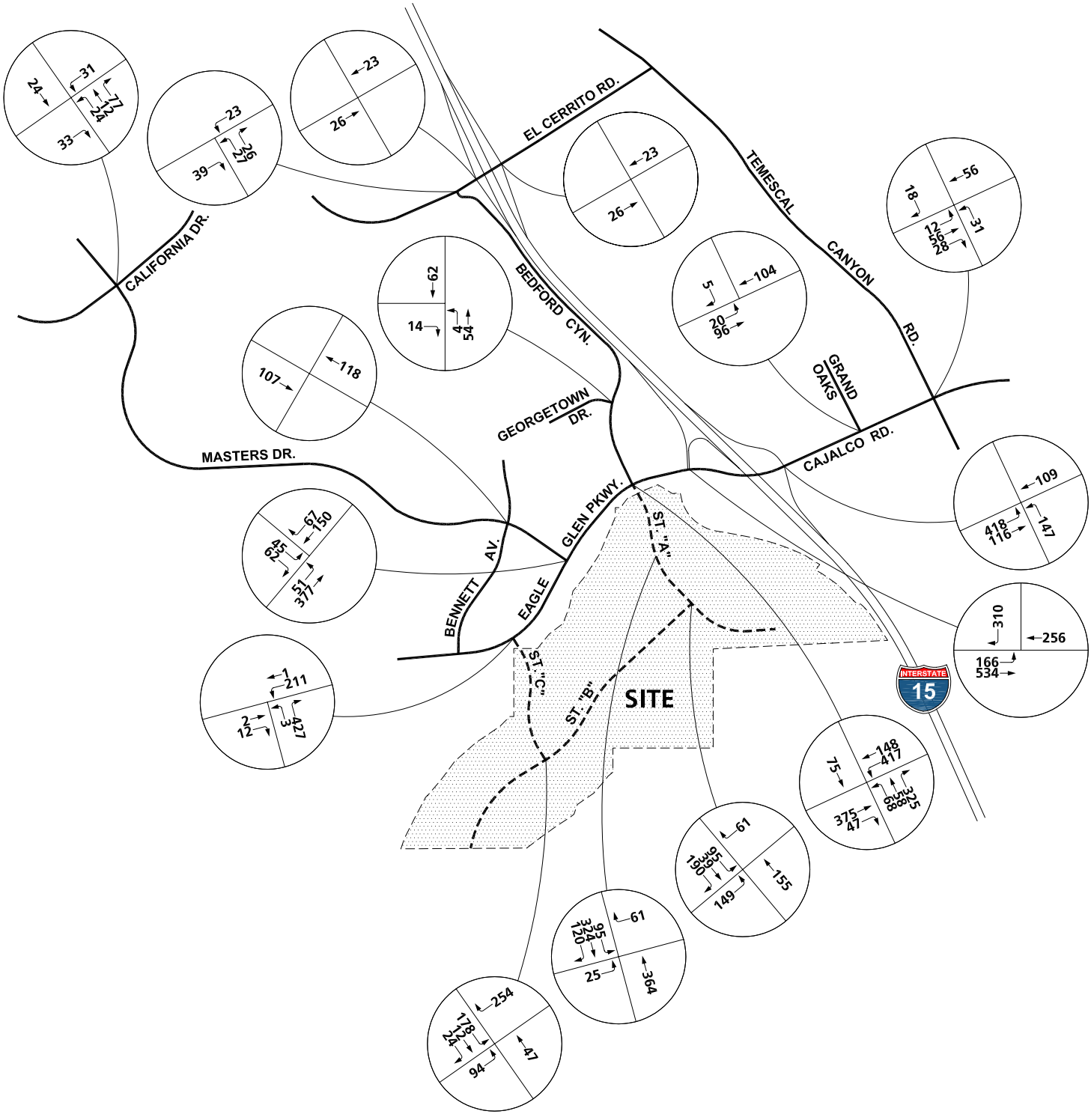


EXHIBIT 3-8

PHASE 2 (2019) PROJECT ONLY
PM PEAK HOUR INTERSECTION VOLUMES

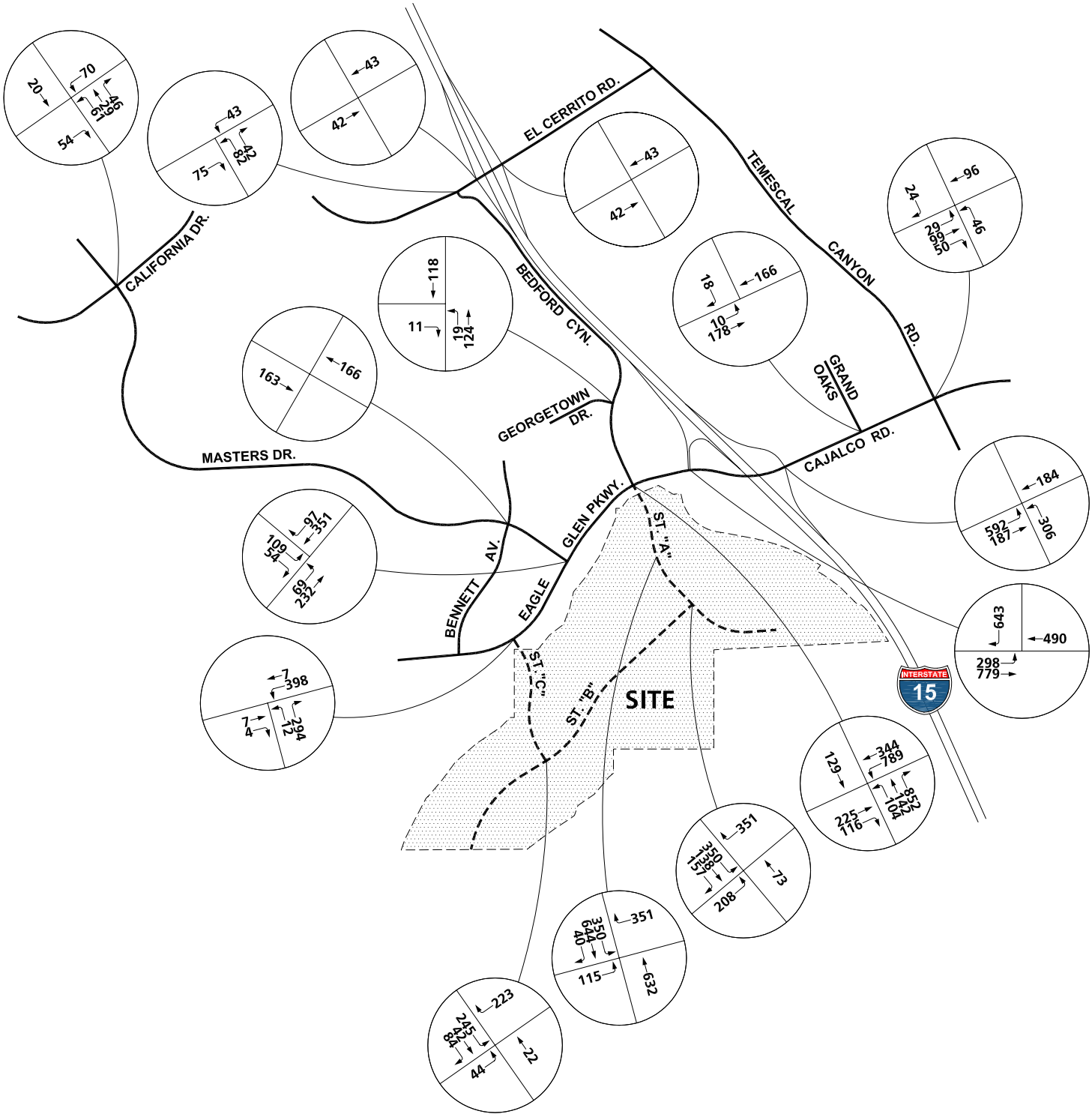


EXHIBIT 3-9

PROJECT PHASE 2 (2019) AVERAGE DAILY TRAFFIC (ADT)

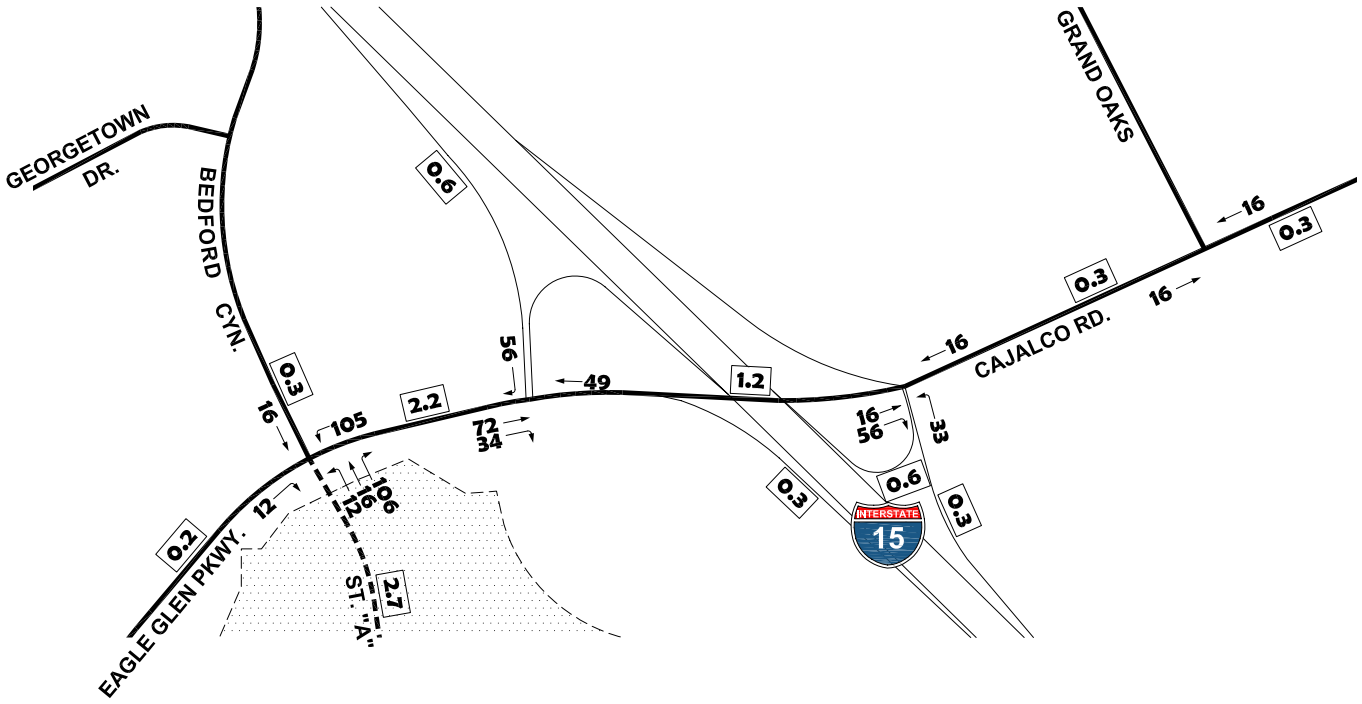
LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 3-10

PHASE 2 (2019) PASS-BY AND DIVERTED TRIPS



PM In	PM Out	Total
133	134	267

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

10 = PM PEAK HOUR TRIPS

N

3.2 Other Future Traffic

To account for ambient growth on area roadways, future 2014 and 2019 traffic volumes have been calculated based on the extrapolation of growth between 2009 conditions and the City of Corona Year 2035 model forecasts. The City of Corona model is based on the Riverside County Transportation Analysis Model (RIVTAM). RIVTAM is a focused traffic model that is consistent with the SCAG Regional Model and includes the entire southern California region (Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties). It includes the greatest level of detail within the primary analysis or study area, with the least detail included in those parts of the model which are geographically distant from the primary study area.

For 2035 conditions, the volumes have been derived from City of Corona model data provided by the City of Corona staff. The 2035 forecasts have been developed from the traffic model using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between the model base year (2008) conditions, exisitng 2009 conditions and future year 2035. For a regional model such as RIVTAM the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. The initial estimate of the future 2035 conditions peak hour turning movements has, therefore, been reviewed for reasonableness. The reasonableness checks performed include a review of flow conservation in addition to ensuring reasonable peak-to-daily relationships and a minimum growth of ten (10) percent over existing 2009 conditions. Where necessary, the initial raw model estimates were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes.

The final 2035 intersection turning volumes were compared to existing 2009 intersection turning volumes to determine the annual growth rate, by movement, observed between 2009 and 2035. The annual growth rate estimated for each turning movement was utilized to estimate the compounded growth between existing 2009 and the interim years 2014 and 2019. Lastly, 2014 without and with project and 2019 without and with project intersection turning volumes were compared to existing 2009 and future year 2035 intersection turning volumes to ensure positive and reasonable growth between the analysis scenarios.

3.3 Total Future Traffic

This analysis assesses the following future traffic conditions:

- 2014 without project conditions
- 2014 with project conditions
- 2019 without project conditions
- 2019 with project conditions
- 2035 without project conditions
- 2035 with project conditions

2014 without project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-11 and 3-12, respectively. Average daily traffic (ADT) volumes for 2014 without project conditions are shown on Exhibit 3-13.

2014 with project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-14 and 3-15, respectively. Average daily traffic (ADT) volumes for 2014 with project conditions are shown on Exhibit 3-16.

2019 without project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-17 and 3-18, respectively. Average daily traffic (ADT) volumes for 2019 without project conditions are shown on Exhibit 3-19.

2019 with project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-20 and 3-21, respectively. Average daily traffic (ADT) volumes for 2019 with project conditions are shown on Exhibit 3-22.

2035 without project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-23 and 3-24, respectively. Average daily traffic (ADT) volumes for 2035 without project conditions are shown on Exhibit 3-25.

2035 with project conditions AM and PM peak hour intersection turning movement volumes are shown on Exhibits 3-26 and 3-27, respectively. Average daily traffic (ADT) volumes for 2035 with project conditions are shown on Exhibit 3-28.

EXHIBIT 3-11

2014 WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES

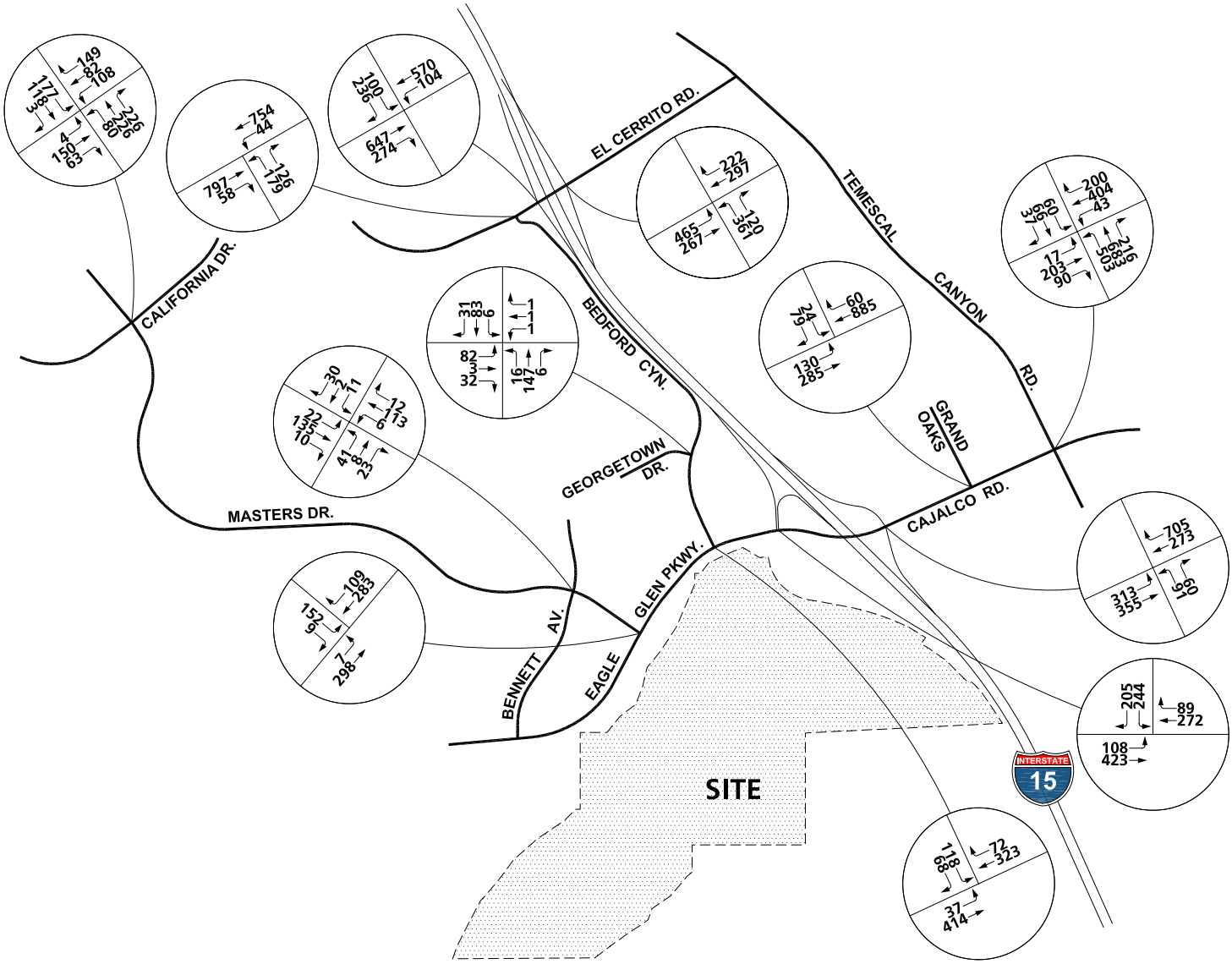


EXHIBIT 3-12

2014 WITHOUT PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

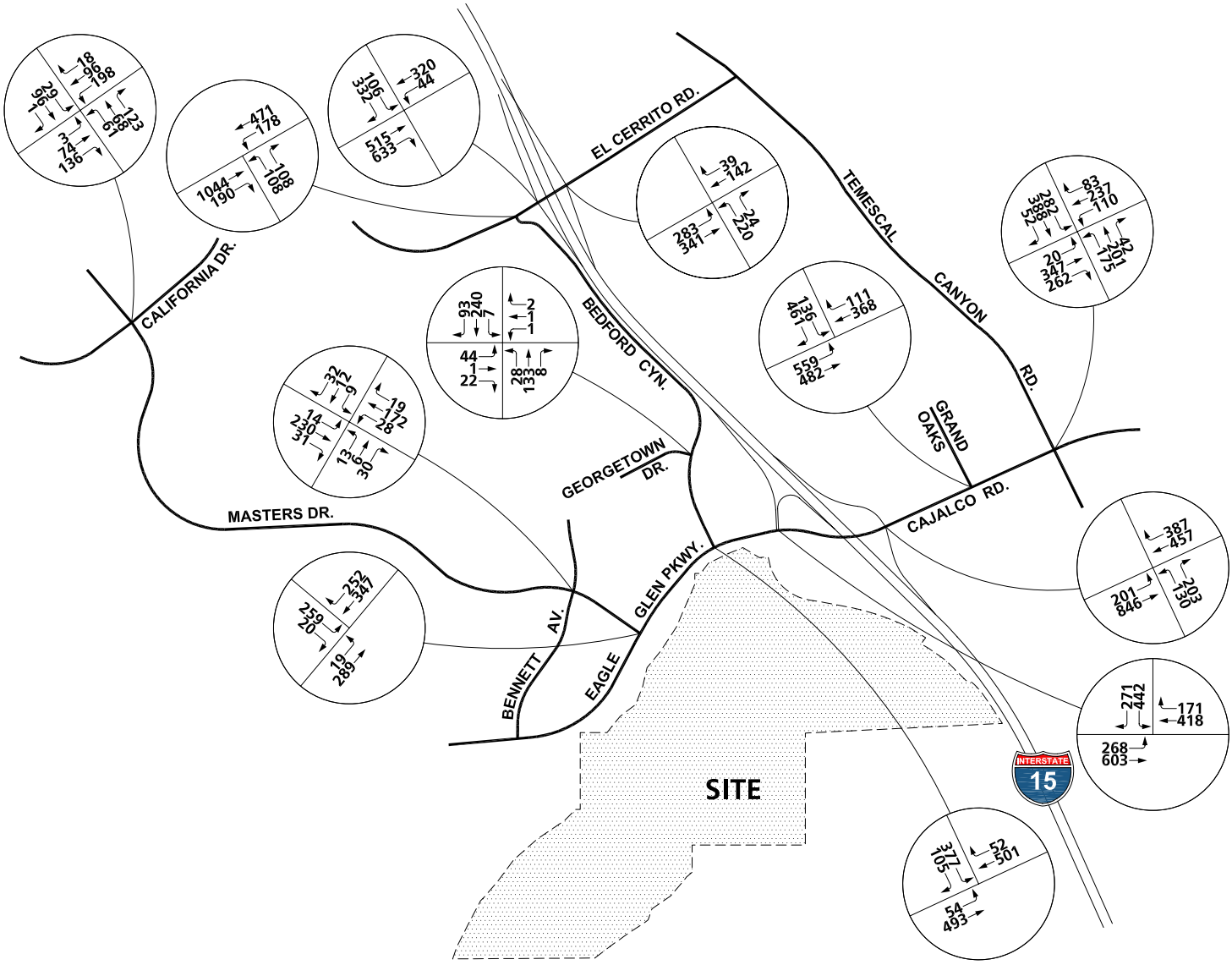


EXHIBIT 3-13

2014 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 3-14

2014 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES

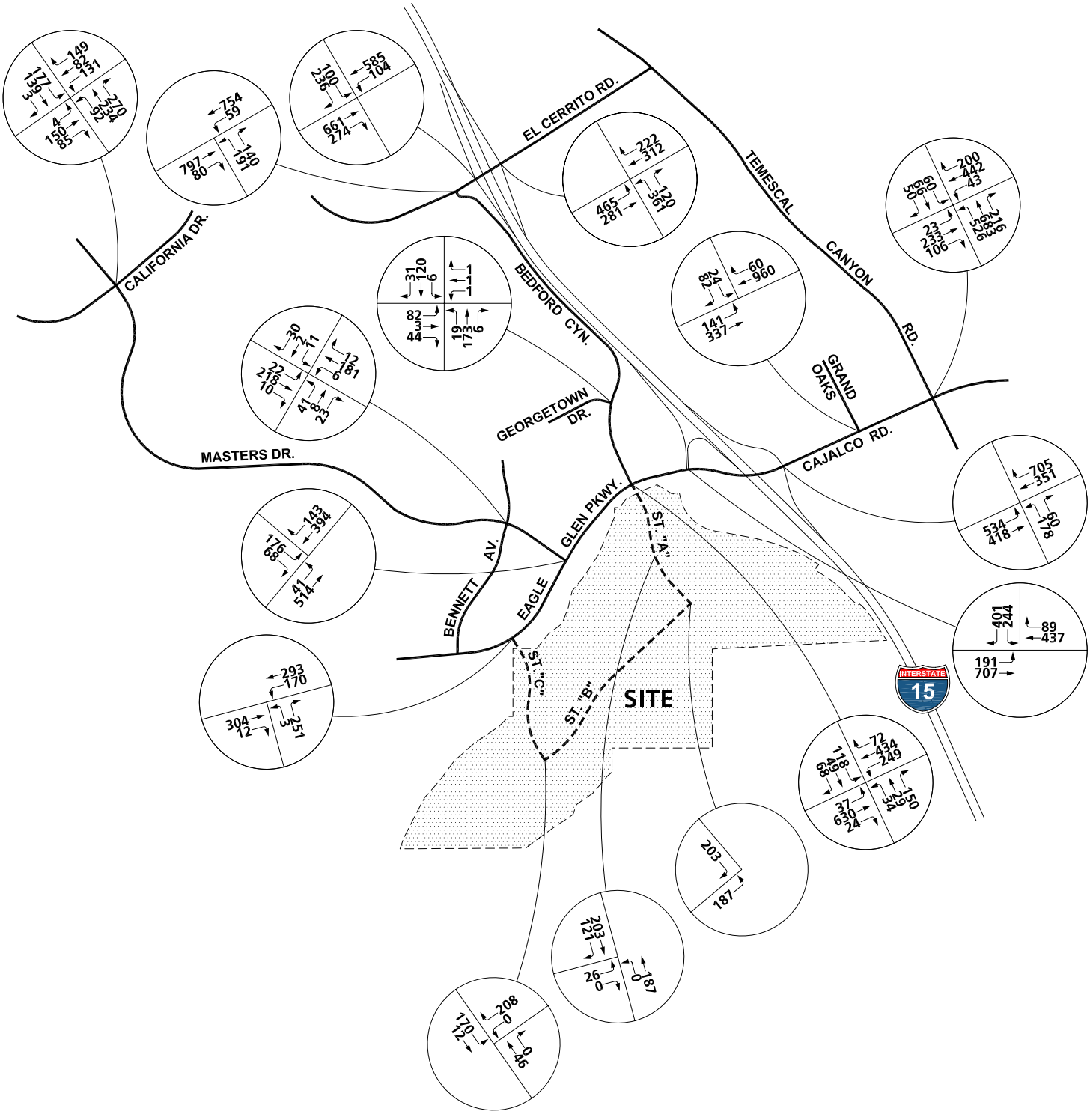


EXHIBIT 3-15

2014 WITH PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

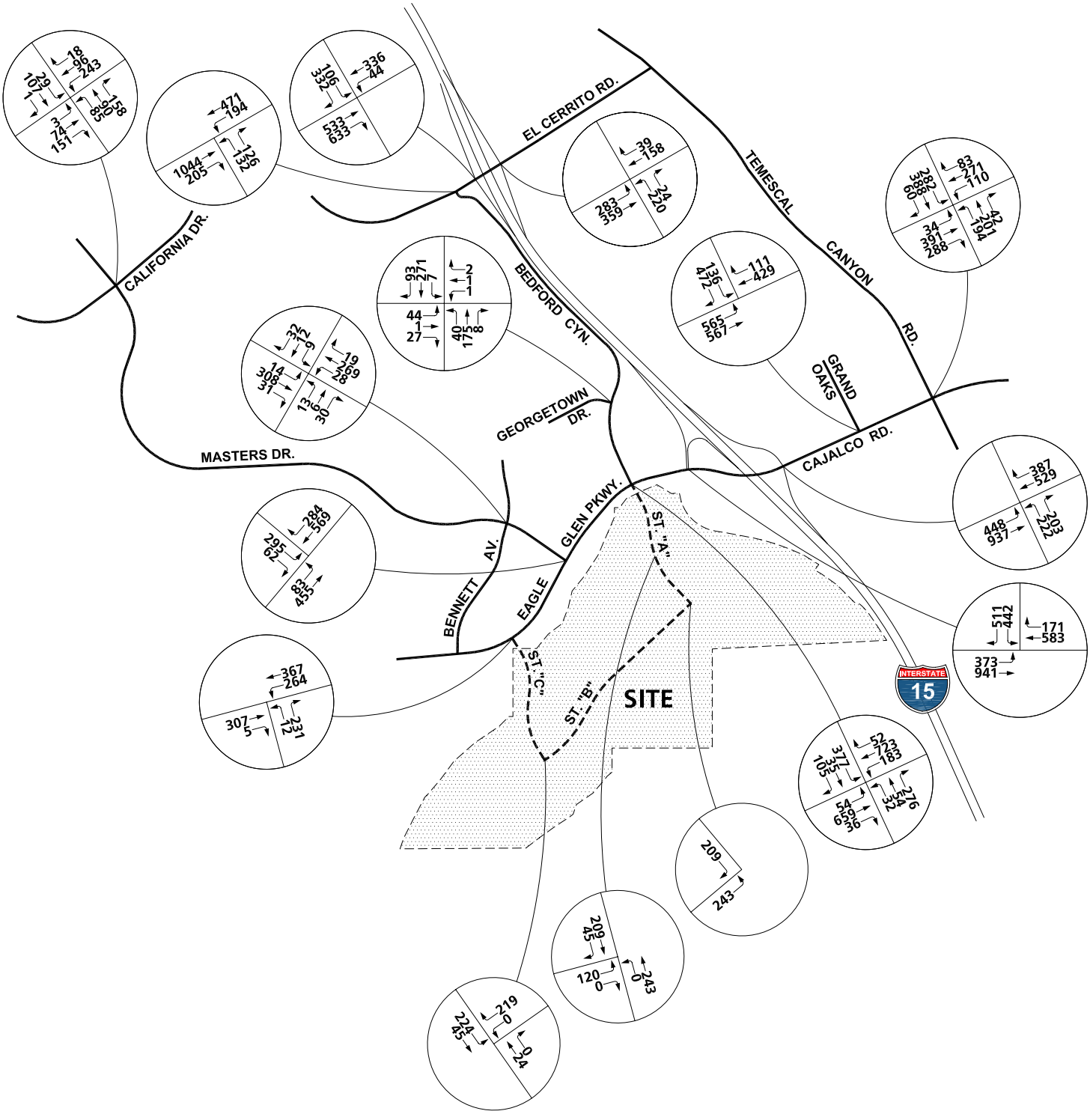


EXHIBIT 3-16

2014 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 3-17

2019 WITHOUT PROJECT AM PEAK HOUR INTERSECTION VOLUMES

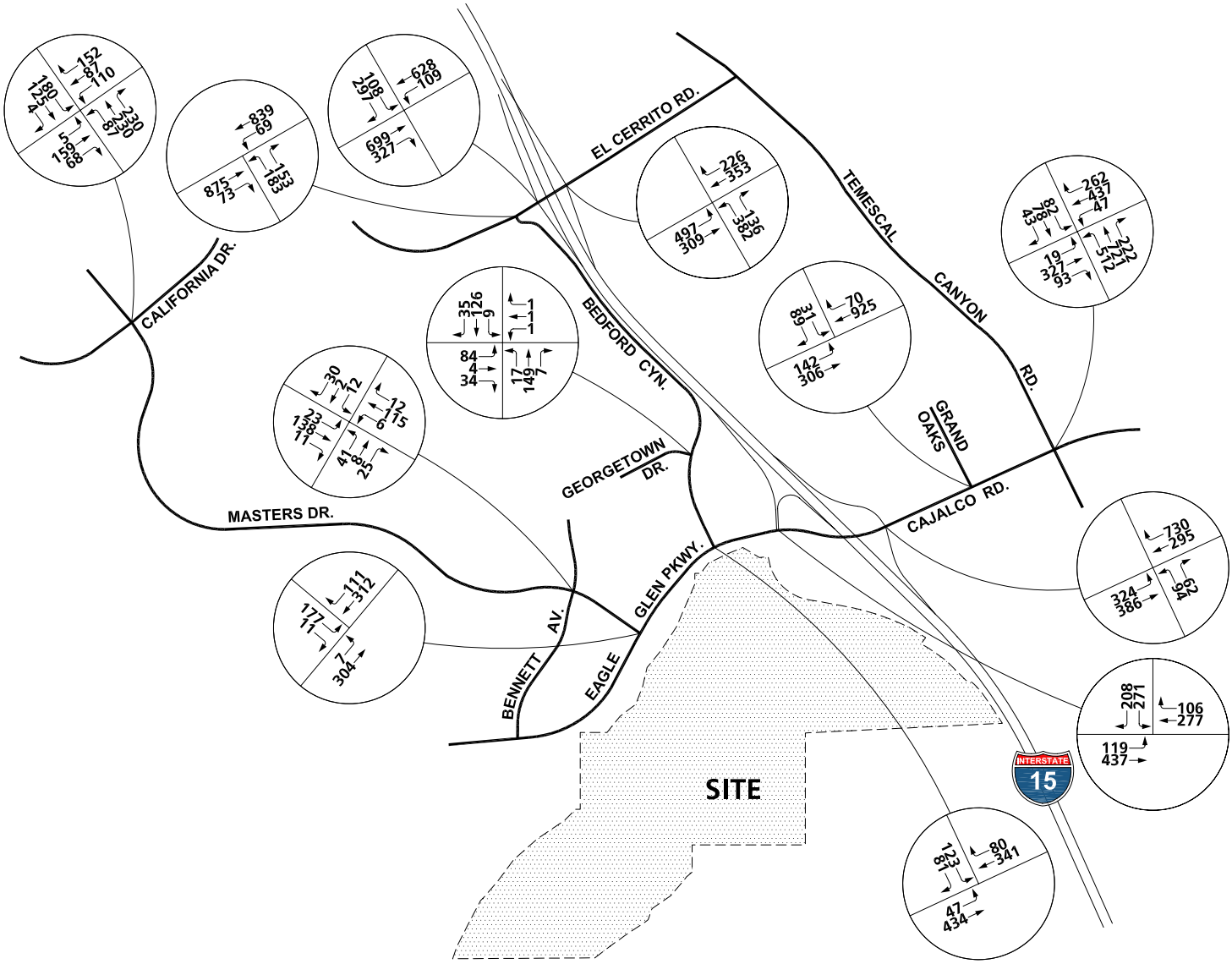


EXHIBIT 3-18

2019 WITHOUT PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

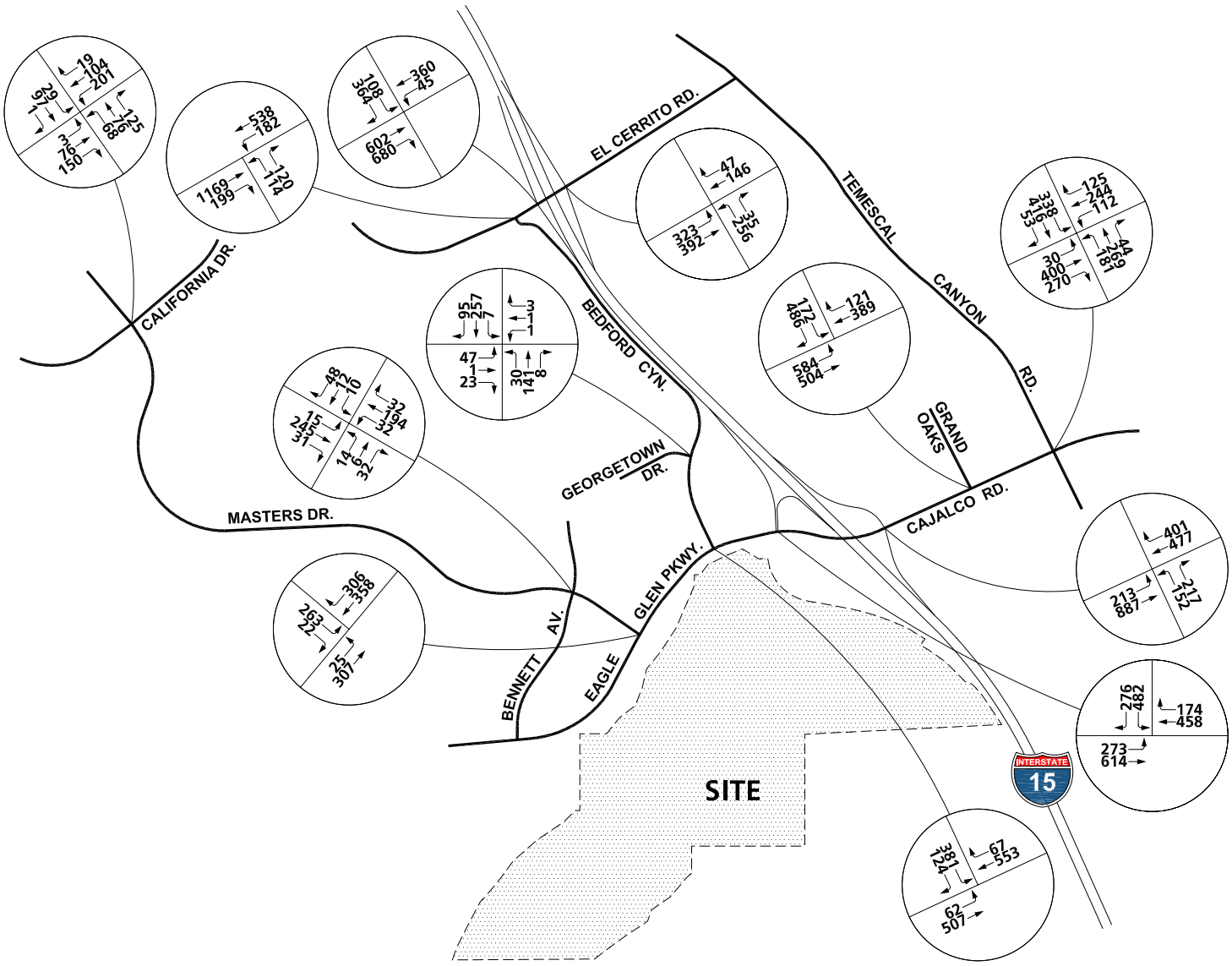


EXHIBIT 3-19

2019 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

EXHIBIT 3-20

2019 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES

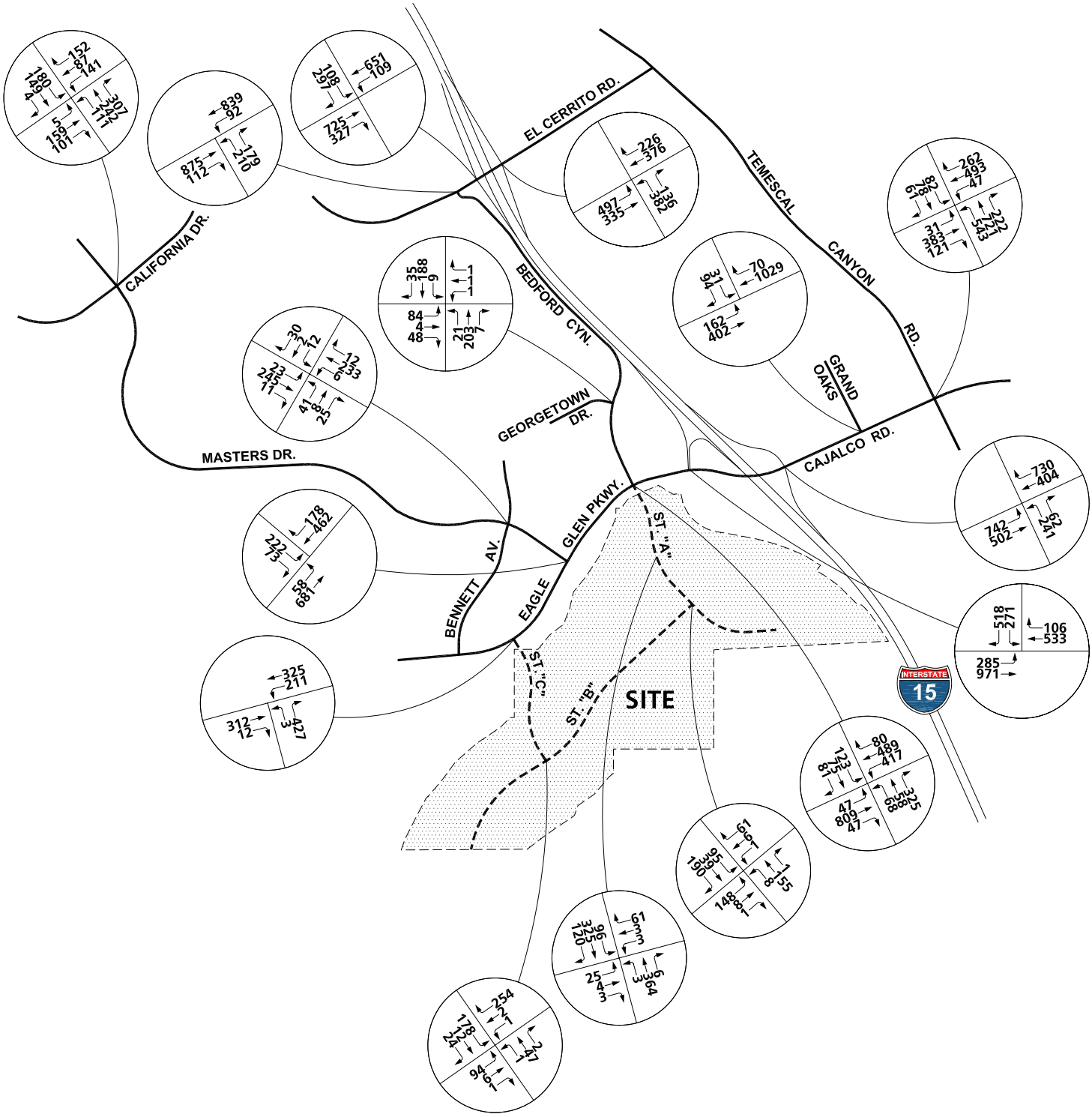


EXHIBIT 3-21

2019 WITH PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

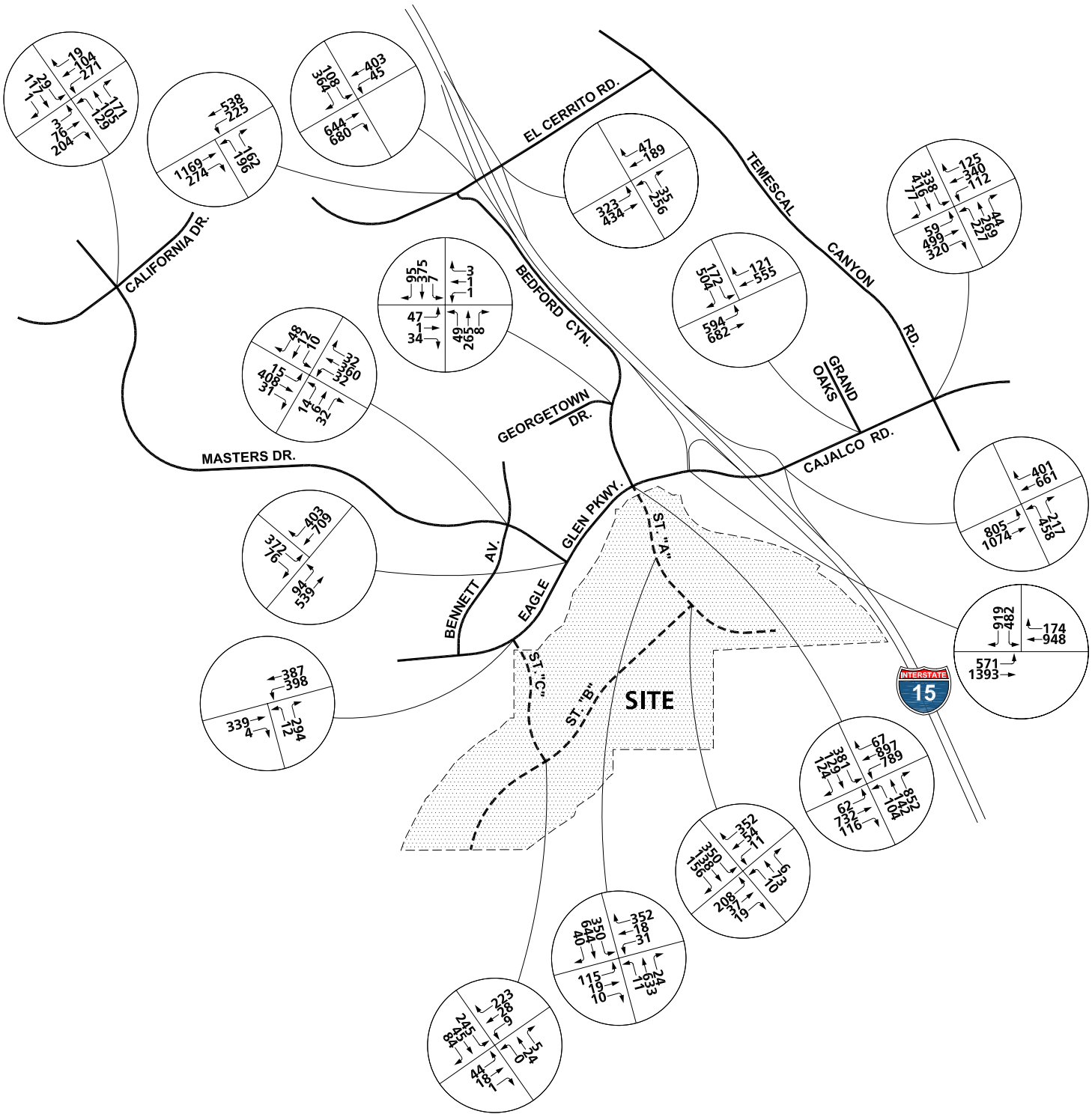


EXHIBIT 3-22

2019 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 3-23

2035 WITHOUT PROJECT
AM PEAK HOUR INTERSECTION VOLUMES

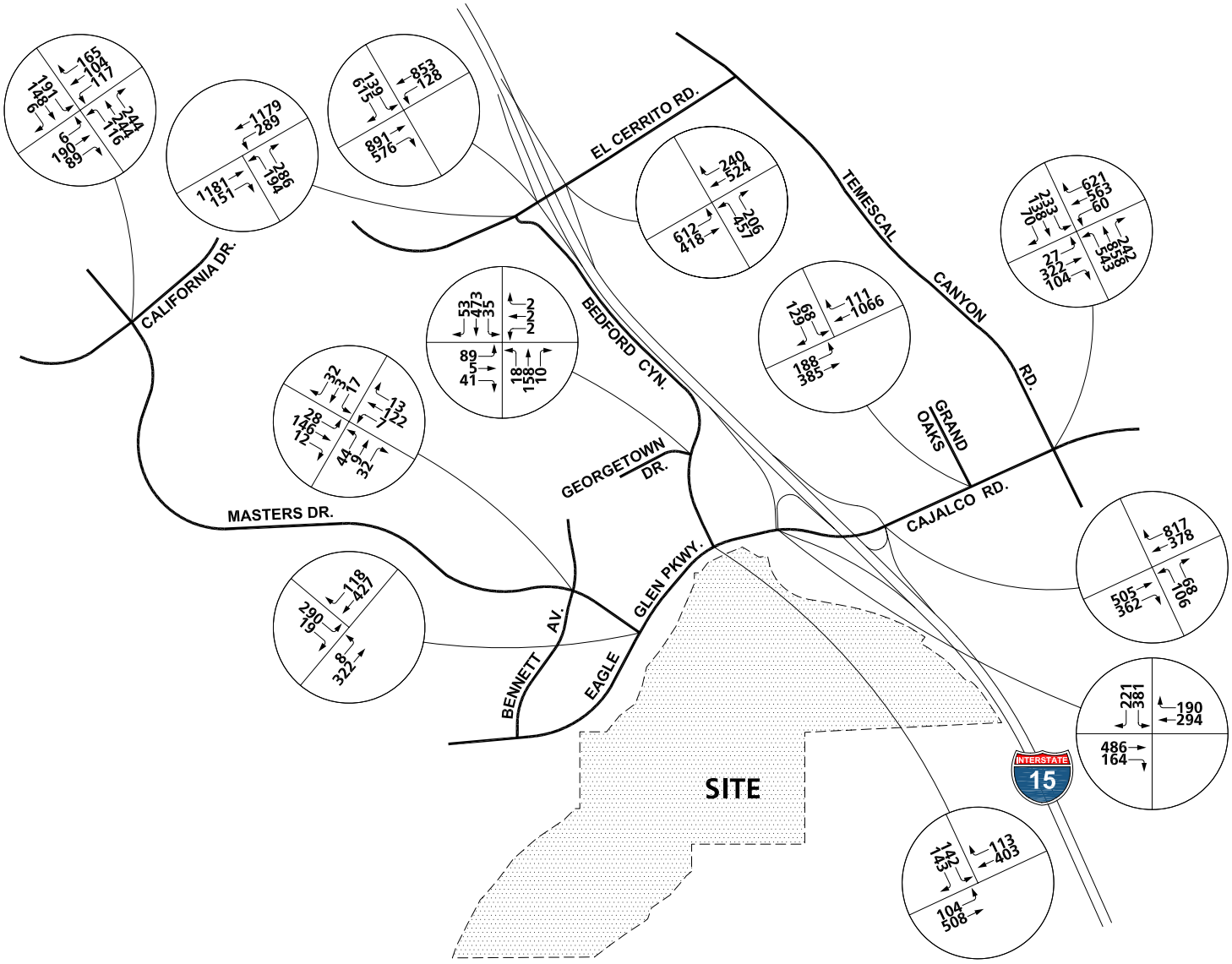


EXHIBIT 3-24

2035 WITHOUT PROJECT
PM PEAK HOUR INTERSECTION VOLUMES

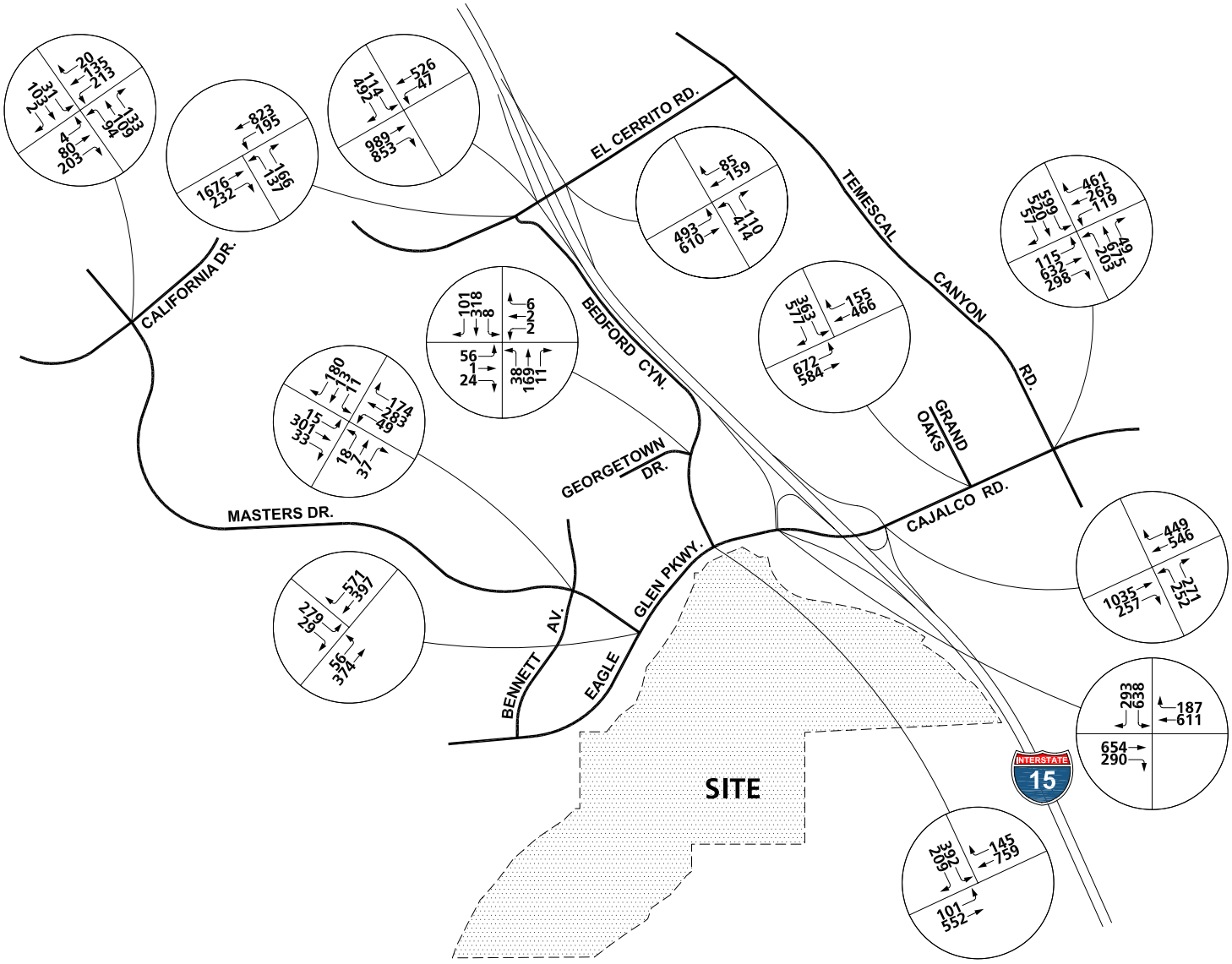


EXHIBIT 3-25

2035 WITHOUT PROJECT AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

EXHIBIT 3-26

2035 WITH PROJECT AM PEAK HOUR INTERSECTION VOLUMES

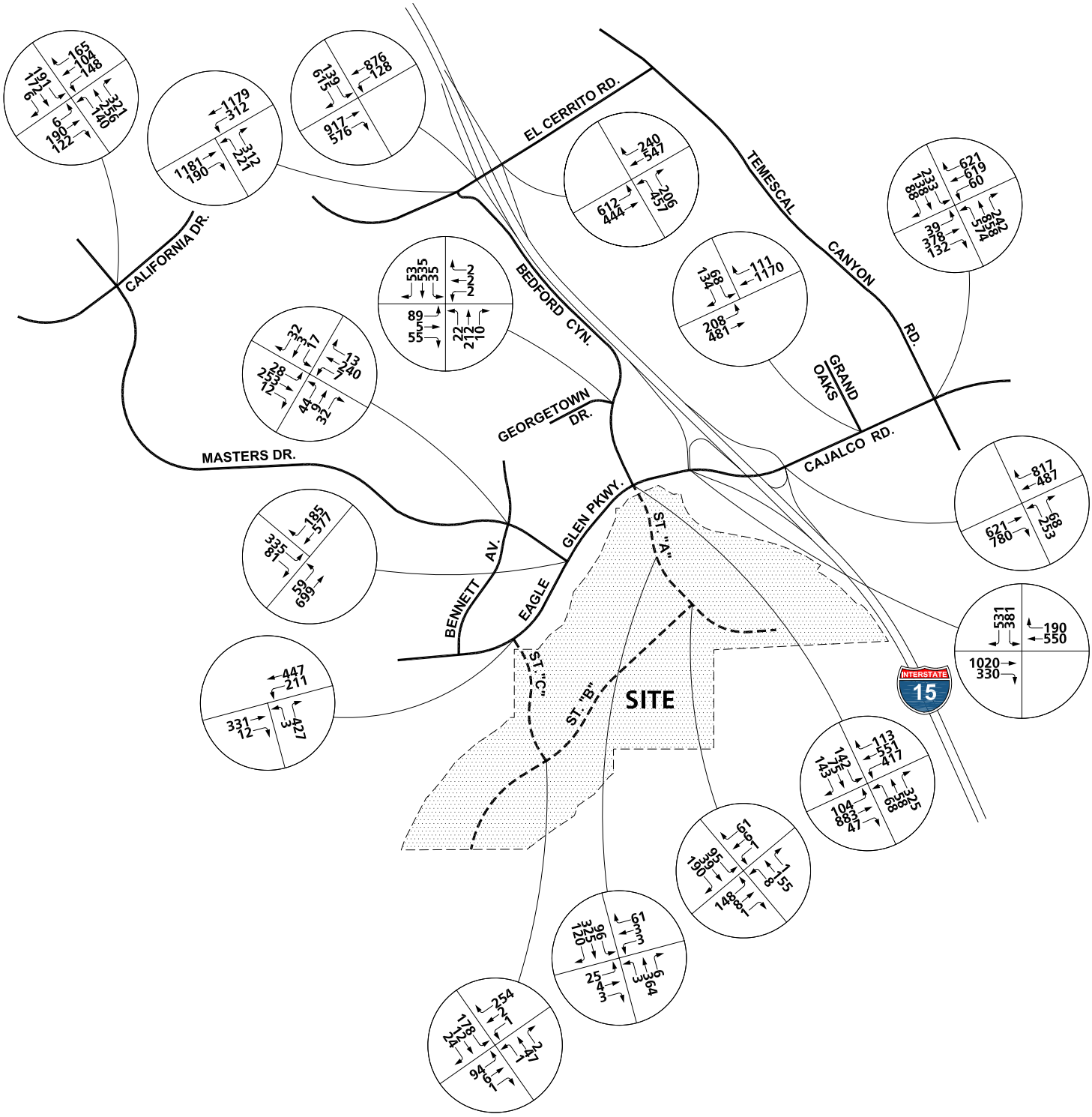


EXHIBIT 3-27

2035 WITH PROJECT PM PEAK HOUR INTERSECTION VOLUMES

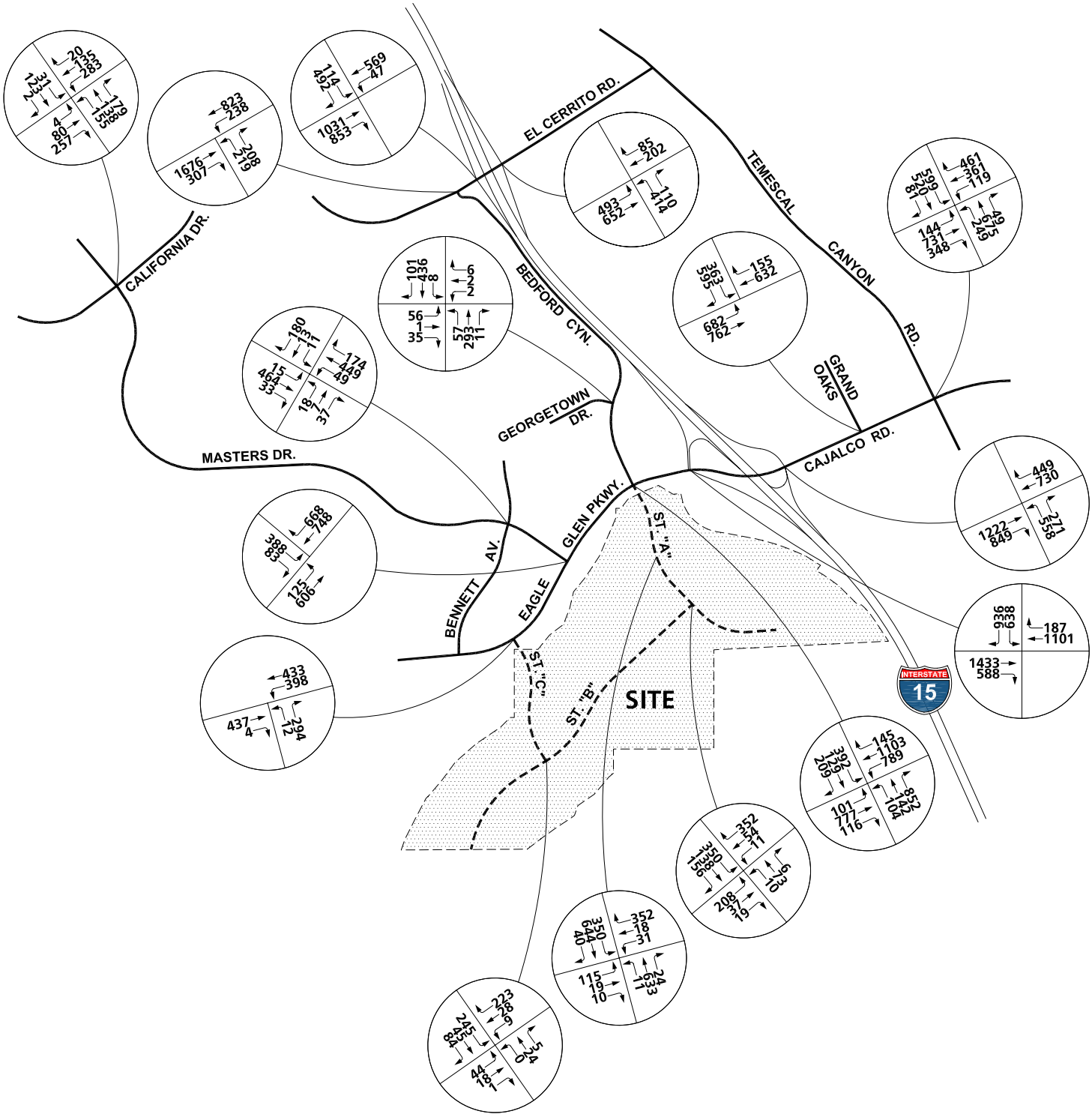


EXHIBIT 3-28

2035 WITH PROJECT AVERAGE DAILY TRAFFIC (ADT)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

N

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4.0 TRAFFIC ANALYSIS METHODOLOGIES

Traffic operations are quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an infrastructure facility (roadway segment, intersection, or freeway facility) representing progressively worsening traffic conditions. This section presents the LOS definition, LOS criteria, and the methodologies for the Intersection Operations Analysis and the Warrant Analysis Traffic Signal.

4.1 Level of Service Definition

The definitions of Level of Service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS A: Completely free-flow conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway and by driver preferences. Maneuverability within the traffic stream is good. Minor disruptions to flow are easily absorbed without a change in travel speed.

- LOS B: Free flow conditions, although the presence of other vehicles becomes noticeable. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver. Minor disruptions are still easily absorbed, although local deterioration in LOS will be more obvious.

- LOS C: The influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream is clearly affected by other vehicles. Minor disruptions can cause serious local deterioration in service, and queues will form behind any significant traffic disruption.

- LOS D: The ability to maneuver is severely restricted due to traffic congestion. Travel speed is reduced by the increasing volume. Only minor disruptions can be absorbed without extensive queues forming and the service deteriorating.

- LOS E: Operations at or near capacity, an unstable level. Vehicles are operating with the minimum spacing for maintaining uniform flow. Disruptions cannot be dissipated readily, often causing queues to form and service to deteriorate to LOS F.

- LOS F: Forced or breakdown flow. It occurs either when vehicles arrive at a rate greater than the rate at which they are discharged or when the forecast demand exceeds the computed capacity of a planned facility. Although operations at these points – and on sections immediately downstream – appear to be at capacity, queues form behind these breakdowns. Operations within queues are highly unstable, with vehicles experiencing brief periods of movement followed by stoppages.

4.2 Level of Service Criteria

In accordance with the City of Corona General Plan, the following intersection LOS thresholds from the General Plan shall be implemented:

- LOS C or better shall be maintained for local intersections in residential/industrial areas.
- LOS D or better shall be maintained on collector and arterial intersections.
- LOS E will be permitted for the following intersections:
    - Lincoln Avenue at SR-91
    - Main Street at SR-91
    - McKinley Avenue at SR-91
    - Hidden Valley Parkway at I-15
    - Cajalco Road at I-15
    - Weirick Road at I-15

The City of Corona LOS criteria for the study area intersections are listed below and summarized on Table 4-1:

- Masters Drive (NS) at California Avenue (EW) [1] – LOS C
- Masters Drive (NS) at Bennett Drive (EW) [2] – LOS C
- Masters Drive (NS) at Eagle Glen Parkway (EW) [3] – LOS C
- Bedford Canyon Road (NS) at Foothill Parkway (EW) [4] – LOS D

Table 4-1

Study Area Intersection
Level of Service Threshold

Intersection		Intersection Level of Service Threshold
No.	Name	
1	Masters Dr. (NS) at: California Dr. (EW)	C
2	Masters Dr. (NS) at: Bennett Av. (EW)	C
3	Masters Dr. (NS) at: Eagle Glen Pkwy. (EW)	D
4	Bedford Cyn. Rd. (NS) at: El Cerrito Rd. (EW)	D
5	Bedford Cyn. Rd. (NS) at: Georgetown Dr. (EW)	C
6	Bedford Cyn. Rd. (NS) at: Eagle Glen Pkwy. (EW)	D
7	I-15 SB Ramps (NS) at: El Cerrito Rd. (EW)	D
8	I-15 SB Ramps (NS) at: Cajalco Rd. (EW)	E
9	I-15 NB Ramps (NS) at: El Cerrito Rd. (EW)	D
10	I-15 NB Ramps (NS) at: Cajalco Rd. (EW)	E
11	Grand Oaks (NS) at: Cajalco Rd. (EW)	D
12	Temescal Cyn. Rd. (NS) at: Cajalco Rd. (EW)	D
13	St. C (NS) at: Eagle Glen Pkwy. (EW)	D
14	St. C (NS) at: St. B (EW)	D
15	St. A (NS) at: Dwy. 1 (EW)	D
16	St. A (NS) at: St. B (EW)	D

- Bedford Canyon Road (NS) at Georgetown Drive (EW) [5] – LOS C
- Bedford Canyon Road (NS) at Eagle Glen Parkway (EW) [6] – LOS D
- I-15 Southbound Ramps (NS) at El Cerrito Road (EW) [7] – LOS D
- I-15 Southbound Ramps (NS) at Eagle Glen Parkway (EW) [8] – LOS E
- I-15 Northbound Ramps (NS) at El Cerrito Road (EW) [9] – LOS D
- I-15 Northbound Ramps (NS) at Cajalco Road (EW) [10] – LOS E
- Grand Oaks (NS) at Cajalco Road (EW) [11] – LOS D
- Temescal Canyon Road (NS) at Cajalco Road (EW) [12] – LOS D
- Street C (NS) at Eagle Glen Parkway (EW) [13] – LOS D
- Street C (NS) at Street B (EW) [14] – LOS D
- Street A (NS) at Project Driveway (EW) [15] – LOS D
- Street A (NS) at Street B (EW) [16] – LOS D

The Arantine Hills Traffic Impact Analysis provides the mitigation measures needed to satisfy the minimum level of service thresholds defined by the City of Corona. This is consistent with the Caltrans *Guide for the preparation of Traffic Impact Studies* that states "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities. However, it should be noted that Caltrans acknowledges that maintaining these levels of service thresholds may not always be feasible and recommends the lead agency consult with Caltrans to determine the appropriate target level of service. If an existing facility is operating at less than the appropriate target LOS, the existing LOS should be maintained.

4.3 Traffic Signal Warrant Analysis Methodology

To determine whether "significance" should be associated with unsignalized intersection operations, a supplemental traffic signal warrant analysis has been prepared. The term "signal warrants" refers to the list of established criteria used by State of California Department of Transportation (Caltrans) and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an otherwise un-signalized intersection. This study uses the signal warrant criteria presented in the 2006 edition of the California's *Manual on Uniform Traffic Control Devices (California MUTCD)* for all study area intersections.

The signal warrant criteria for existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The California *MUTCD* indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, the study utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing traffic conditions. Since Warrant 3 provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less that 10,000 persons or with adjacent major streets operating at or above 40 miles per hour), study intersections qualifying for this specialized criteria have been clearly identified on the traffic signal warrant sheet. For the purposes of this study, the speed limit was the basis of determining whether Urban or Rural warrants were used for a given intersection.

For future traffic conditions, unsignalized intersections and new intersections are assessed regarding the need for new traffic signals based on future average daily traffic (ADT) volumes, using the planning level ADT-based signal warrant analysis worksheets.

The existing conditions traffic signal warrant analysis is presented in previous Section 2.4, and the future conditions traffic signal warrant analysis is presented in subsequent Section 5.1.

4.4 Intersection Operations Analysis Methodology

The current technical guide for the evaluation of traffic operations for the County of Riverside is the 2000 Highway Capacity Manual (HCM) (Transportation Research Board Special Report 209). The HCM defines Level of Service as a qualitative measure, which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate Level of Service (LOS) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the level of service at an

intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

For signalized intersections, average total delay per vehicle for the overall intersection is used to determine level of service. Levels of service at the signalized study area intersections have been evaluated using an HCM intersection analysis program.

The study area intersections that are stop sign controlled with stop control on the minor street only have been analyzed using the HCM's unsignalized intersection methodology. For these intersections, the calculation of level of service is dependent on the frequency and size of gaps occurring in the traffic flow of the main street. Using data collected describing the intersection configuration and traffic volumes at the study area locations, the level of service has been calculated. The level of service criteria for this type of intersection analysis is based on average total delay per vehicle for the worst minor street movement(s).

For all way stop (AWS) controlled intersections, the ability of vehicles to enter the intersection is not controlled by the occurrence of gaps in the flow of the main street. The AWS controlled intersections have been evaluated using the HCM methodology for this type of multi-way stop controlled intersection configuration. The level of service criteria for this type of intersection analysis is also based on average total delay per vehicle for the overall intersection.

The levels of service for the HCM delay methodology, for signalized and un-signalized intersections, are defined as follows:

Level of Service	Average Total Delay Per Vehicle (Seconds)	
	Signalized	Unsignalized
A	0 to 10.00	0 to 10.00
B	10.01 to 20.00	10.01 to 15.00
C	20.01 to 35.00	15.01 to 25.00
D	35.01 to 55.00	25.01 to 35.00
E	55.01 to 80.00	35.01 to 50.00
F	80.01 and up	50.01 and up

The intersection operations analysis for signalized intersections has been performed using optimized signal timing. This analysis has included an assumed lost time of four seconds per phase in accordance with HCM recommended default values. Initial saturation flow rates of 1,900

vehicles per hour of green (vphg) have been assumed for all capacity analysis. In addition, peak hour factors and minimum green times have been applied to the existing counts based on the County's traffic study guidelines.

For most of the study area intersections excluding the closely-spaced intersection network along Cajalco Road at the I-15 interchange, the intersection operations analyses are based on calculations using the TRAFFIX computer software. TRAFFIX is an intersection operations analysis computer software program developed by Dowling Associates. TRAFFIX has the capability of producing future traffic forecast and calculating intersection level of service at signalized and un-signalized intersections using various methods. TRAFFIX assumes that the intersections operate as isolated locations with random vehicular arrival rates.

For the closely-spaced intersection network along Cajalco Road at the I-15 interchange, the intersection operations analyses have been based on calculations using the SYNCHRO computer software. Developed by Trafficware, SYNCHRO has the capability of modeling and optimizing traffic signal timing. Specific features include analyzing the capacities of coordinated intersections using the HCM methodologies, determining queue lengths, and optimizing splits, cycle lengths and offsets. The traffic signal progression evaluation has been conducted to evaluate vehicular queuing and stacking length requirements by considering the signal timing and physical spacing of intersections.

For the intersection operations analysis, the study area includes the intersections shown previously on Exhibit 1-1. The existing 2009 conditions intersection operations analysis is presented in previous Section 2.4. The future conditions intersection operations analysis is presented in subsequent Section 5.2 of this report.

4.5 Ramp Metering Analysis Methodology

Ramp metering of freeway on-ramp traffic is a demand management tool that is widely recognized as maximizing freeway mainline operational efficiency. At the same time, providing adequate vehicle storage is critical to local acceptance of this important tool. The *Ramp Meter Design Manual* (published by State of California Department of Transportation, January, 2000) indicates that ramp meters can provide acceptable performance for flow rates between 240 vehicles per hour and 900 vehicles per hour (VPH) for a single-lane ramp, and higher flows

require additional lanes. A maximum acceptable volume of 900 VPH has been used to determine the minimum necessary number of lanes for each on-ramp.

The manual also indicates that additional lanes may be desirable for purposes of providing adequate vehicular storage. The situation of a traffic flow of between 500 and 900 VPH is presented as an explicit situation where providing a two-lane ramp meter may be desirable to provide adequate vehicular storage. Therefore, adequate vehicular storage may require provision of additional lanes as long as the traffic flow rate per lane is between 240 and 900 VPH.

The impacts of ramp meter queuing have been evaluated at the following on-ramp locations:

- I-15 Southbound Ramp On-Ramp at Cajalco Road
- I-15 Northbound Ramp On-Ramp at Cajalco Road
- I-15 Southbound Ramp On-Ramp at El Cerrito Road
- I-15 Northbound Ramp On-Ramp at El Cerrito Road

The existing 2009 conditions ramp metering analysis is presented in previous Section 2.6. The future conditions ramp metering analysis is presented in subsequent Section 5.3 of this report.

4.6 Ramp Merge and Diverge Analysis Methodology

The ramp operations analyses have been conducted based on the HCM's Merge and Diverge analysis methods, since the on-ramps and off-ramps of the adjacent interchanges are spaced more than 2,500 feet apart. The ramp merge and diverge analysis has been performed using the Highway Capacity Software (HCS2000) computer software program, developed by the McTrans Center at the University of Florida. The results have been calculated based on the existing number of ramp lanes, freeway mainline travel lanes, the potential widening to include additional travel lanes on the ramps and each direction of the freeway, and the spacing between ramps. HCM-based traffic density criteria for freeway ramp junction Levels of Service are presented below:

Level of Service	Ramp Merge/Diverge Operations Density (passenger car/mile/lane)
A	≤ 10
B	> 10 – 20
C	> 20 – 28
D	> 28 – 35
E	> 35
F	Demand exceeds capacity

4.7 Roadway Link Analysis

The roadway link analysis is based on a comparison of the Average Daily Traffic (ADT) projected for a roadway segement with the maximum allowed under the "Estimated 24 hour Traffic (ADT)" of the City of Corona Street Design Table. The roadway link analysis essentially provides a comparison between the roadway link volume (v) to the theoretical capacity (c) producing a volume-to-capacity ratio or (v/c) ratio. The daily roadway link capacities for each of the General Plan roadway classifications are summarized on Table 4.2. Although the theoretical ADT capacities are suitable for planning purposes, they are not precise measures of capacity.

The ultimate capacity of a roadway is based upon a number of factors. These factors include the relationships between peak hour and daily traffic volumes, the roadway design features (intersection spacing, intersection geometries, design speed, number of lanes, etc.), and the proportions and amounts of traffic turning at key intersections (along with the amount of traffic crossing the roadway or turning onto or off of the roadway at intersecting roadways).

The various volume-to-capacity (v/c) ratio ranges used for the purposes of estimating overall performance along the study area roadway segments are discussed below:

- 0.00 – 0.80 = ACCEPTABLE represents a range of free flow to stable flow. Individual users are virtually unaffected by the presence of others in the traffic stream, and begin to become significantly affected by interactions with others in the traffic stream.

- 0.81 – 1.00 = APPROACHING CAPACITY represents high-density but stable flow, where speed and freedom to maneuver are severely restricted at certain times of the day, and the driver experiences a generally poor level of comfort and convenience

Table 4-2

Roadway Link Capacity[1]

Roadway Classification	Number of Lanes	Maximum 24 Hour Traffic Volume (ADT)[2]
Collector	2	10,000
Secondary Arterial	4	20,000
Divided Major Arterial	6	50,000

[1] Maximum Roadway Capacity from the City of Corona Street Design Table.

[2] Roadway link operations are evaluated using generalized daily capacities as a screening tool. The generalized daily roadway link capacities (LOS "E" of ultimate capacities) are suitable for planning purposes, but they are not precise measures of capacity. The actual daily capacity of a roadway is based upon a number of factors. These factors include the relationships between peak hour and daily traffic volumes, the roadway design features (access spacing, intersection geometries, etc.), and the proportions and amounts of traffic turning at key intersections (along with the amount of traffic crossing the roadway or turning onto or off of the roadway at intersections).

during peak hours. Peak period speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement during peak hours.

- Greater than 1.00 = POTENTIALLY EXCEEDS CAPACITY is used to define forced or breakdown flow during peak hours. This condition exists wherever the amount of peak period traffic approaching a point exceeds the amount which can traverse the point. Queues may form behind such locations during peak hours.

Since the LOS for segments on roadways that are signalized with closely spaced intersections can normally be determined by the intersection operations analysis, roadway segment widening is recommended when:

- The roadway segment v/c ratio is approaching or potentially exceeds capacity (v/c > 0.81), and,
- The adjacent intersections operate at unacceptable levels of service during the peak hours without additional through lane intersection improvements.

4.8 Project Fair Share Calculation Methodology

The City of Corona Traffic Impact Study Guidelines provides a formula for estimating the project fair share percentages based on average intersection delay. The percentage of fair share for the project shall be calculated at each location as the ratio of the increase in delay from project trips divided by the differnce between total delay (including) and delay at accepatabe Level of Service. In addition, for non-master planned facilities where there is no reasonable expectation that future development will significantly impact the facility, the project will be responsible for 100% of the mitigation cost and “fair share” will not apply. The following equation is used to calculate the project fair share percentage:

$$\text{Project Fair Share \%} = \frac{\text{Project Only Delay}}{\text{(Total Delay “with project” – Max Acceptable DelayTraffic)}}$$

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5.0 FUTURE CONDITIONS TRAFFIC ANALYSIS

This study assesses the traffic circulation of the proposed project for existing and future traffic conditions, based on the following analyses:

- Traffic Signal Warrant Analysis
- Intersection Operations Analysis
- Freeway Ramp Metering Analysis
- Freeway Ramp Merge / Diverge Analysis
- Future Conditions Roadway Link Analysis
- Project Fair Share Calculations

5.1 Future Conditions Traffic Signal Warrant Analysis

A traffic signal warrant analysis has been conducted for each of the following future conditions, based on average daily traffic (ADT) volumes:

- 2014 without project conditions
- 2014 with project (Phase 1) conditions
- 2019 without project conditions
- 2019 with project (Phase 2) conditions
- 2035 without project conditions
- 2035 with project conditions

A detailed discussion of the methodologies behind the traffic signal warrant analysis is presented in previous Section 4.3 of this report.

5.1.1 Traffic Signal Warrant Analysis, 2014 Without Project Conditions

Based on 2014 without project conditions, no additional traffic signals are projected to be warranted at the study area intersections other than those already warranted under existing 2009 conditions.

Traffic signal warrant analysis worksheets for 2014 without project conditions are included in Appendix 5.1 of this report.

5.1.2 Traffic Signal Warrant Analysis, 2014 With Project Conditions

Based on 2014 with project (Phase 1) conditions, a traffic signal is projected to be warranted at the following study area intersection other than those already warranted under existing 2009 conditions:

Street C (NS) at:

- Eagle Glen Parkway (EW) [13]

Traffic signal warrant analysis worksheets for 2014 with project (Phase 1) conditions are included in Appendix 5.1 of this report.

5.1.3 Traffic Signal Warrant Analysis, 2019 Without Project Conditions

Based on 2019 without project conditions, no additional traffic signals are projected to be warranted at the study area intersections other than those already warranted under existing 2009 conditions.

Traffic signal warrant analysis worksheets for 2019 without project conditions are included in Appendix 5.1 of this report.

5.1.4 Traffic Signal Warrant Analysis, 2019 With Project Conditions

Based on 2019 with project (buildout) conditions, additional traffic signals are projected to be warranted at the following two (2) study area intersections other than those already warranted under existing 2009 and 2014 with project (Phase 1) conditions:

Street A (NS) at:

- Driveway 1 (EW) [15]
- Street B (EW) [16]

Traffic signal warrant analysis worksheets for 2019 with project (buildout) conditions are included in Appendix 5.1 of this report.

5.1.5 Traffic Signal Warrant Analysis, 2035 Without Project Conditions

Based on 2035 without project conditions, an additional traffic signal is projected to be warranted at the following study area intersection other than those already warranted under existing 2009 conditions:

Bedford Canyon Road (NS) at:

- Georgetown Drive (EW) [5]

Traffic signal warrant analysis worksheets for 2035 without project conditions are included in Appendix 5.1 of this report.

5.1.6 Traffic Signal Warrant Analysis, 2035 With Project Conditions

Based on 2035 with project conditions, an additional traffic signal is projected to be warranted at the following study area intersection other than those already warranted under existing 2009, 2014 with project (Phase 1), and 2019 with project (buildout) conditions:

Masters Drive (NS) at:

- Bennett Avenue (EW) [2]

Traffic signal warrant analysis worksheets for 2035 with project conditions are included in Appendix 5.1 of this report.

It should be noted that the project intersection of Street C and Street B is projected not to be warranted for a traffic signal under any of the future traffic conditions.

5.2 Future Conditions Intersection Operations Analysis

The intersection operations analysis for the following future conditions has been evaluated, based on the Highway Capacity Manual (HCM) method:

- 2014 without project conditions
- 2014 with project (Phase 1) conditions
- 2019 without project conditions
- 2019 with project (Phase 2) conditions
- 2035 without project conditions
- 2035 with project conditions

The discussion regarding the intersection operations analysis methodologies is presented in previous Section 4.4 of this report.

5.2.1 Intersection Operations Analysis, 2014 Without Project Conditions

Table 5-1 summarizes the intersection operations analysis results at the study area intersections for 2014 without project conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for 2014 without project conditions were shown previously on Exhibits 3-11 and 3-12, respectively.

As shown in Table 5-1, the following study area intersection is anticipated to operate at unacceptable levels of service during the peak hours for 2014 without project conditions, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F

However, with the recommended intersection improvements illustrated on Exhibit 5-1, all of the study area intersections are projected to operate at acceptable levels of service for 2014 without project conditions. While the intersection of Masters Drive at Eagle Glen Parkway meets traffic signal warrants under existing conditions, it is anticipated to operate at acceptable levels of service under 2014 without project conditions, therefore, no improvements are recommended.

2014 without project conditions intersection operations analysis worksheets are included in Appendix 5.2 of this report.

Table 5-1

2014 Without Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at:																		
	• California Dr. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	--[4]	11.5	F	B	C
	- With Improvements	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	13.0	10.7	B	B	C
2	Masters Dr. (NS) at:																		
	• Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	8.5	9.6	A	A	C
3	Masters Dr. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	10.7	14.4	B	B	D
4	Bedford Cyn. Rd. (NS) at:																		
	• El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	17.0	19.4	B	B	D
5	Bedford Cyn. Rd. (NS) at:																		
	• Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	8.8	9.3	A	A	C
6	Bedford Cyn. Rd. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	TS	0	0	0	1	0	1>	1	2	0	0	2	1>	18.4	26.0	B	C	D
7	I-15 SB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	22.1	25.7	C	C	D
8	I-15 SB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	25.7	37.8	C	D	E
9	I-15 NB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	35.9	29.4	D	C	D
10	I-15 NB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	28.4	43.4	C	D	E
11	Grand Oaks (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	14.9	24.5	B	C	D
12	Temescal Cyn. Rd. (NS) at:																		
	• Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	36.6	39.2	D	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

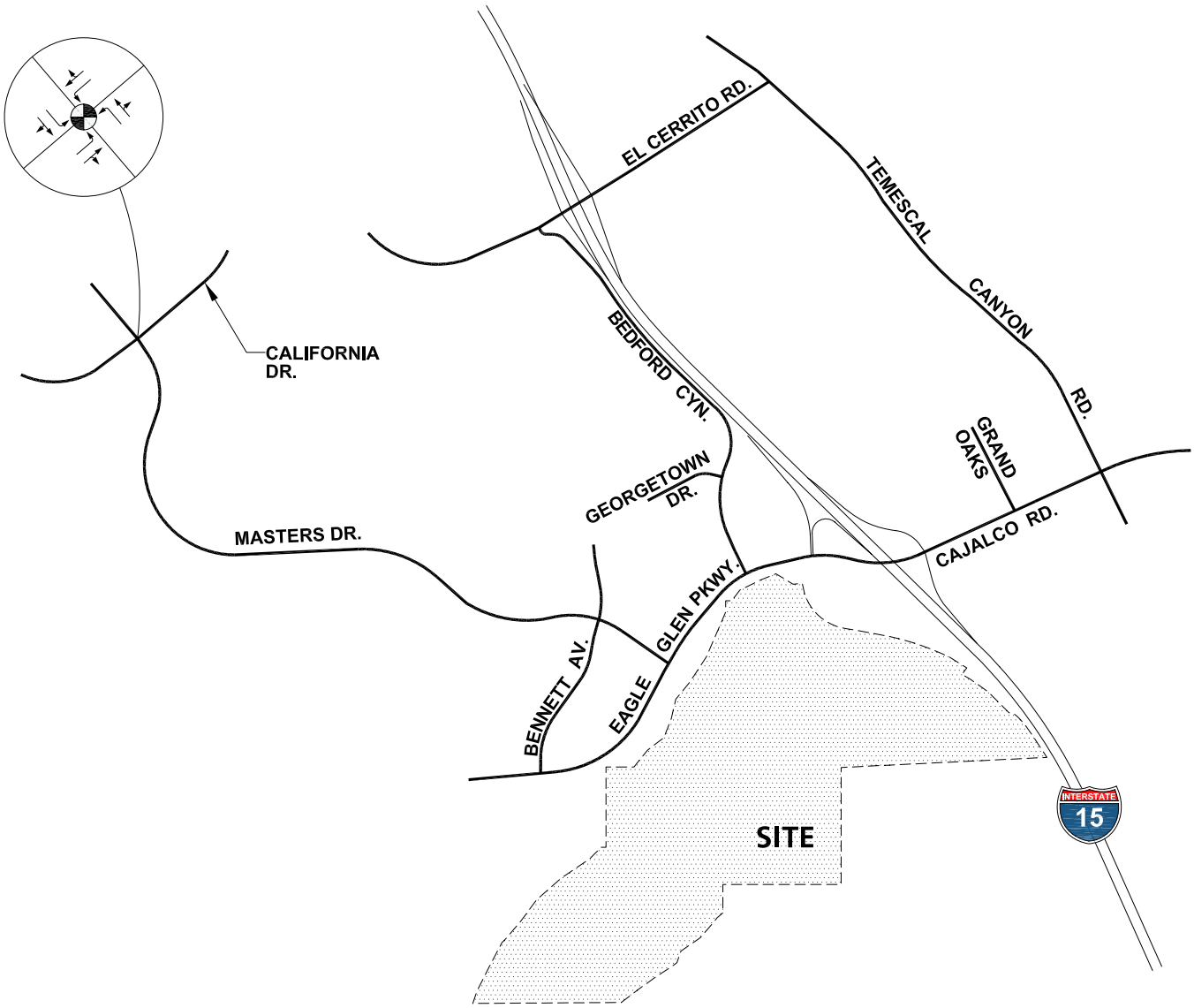
[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

EXHIBIT 5-1

RECOMMENDED INTERSECTION IMPROVEMENTS FOR 2014 WITHOUT PROJECT CONDITIONS



LEGEND:

= TRAFFIC SIGNAL

= EXISTING LANE

= CURRENT PHASE IMPROVEMENTS

N

5.2.2 Intersection Operations Analysis, 2014 With Project Conditions

Table 5-2 summarizes the intersection operations analysis results at the study area intersections for 2014 with project (Phase 1) conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for 2014 with project (Phase 1) conditions were shown previously on Exhibits 3-14 and 3-15, respectively.

As shown in Table 5-2, the three (3) existing intersections listed below are anticipated to operate at unacceptable levels of service during the peak hours for 2014 with project (Phase 1) conditions, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F

Bedford Canyon Road (NS) at:

- Eagle Glen Parkway (EW) [6] – LOS F

I-15 Southbound Ramps (NS) at:

- Cajalco Road (EW) [8] – LOS F

However, with the recommended intersection improvements illustrated on Exhibit 5-2, all of the study area intersections are projected to operate at acceptable levels of service for 2014 with project (Phase 1) conditions.

Based upon field review of traffic operations at the Cajalco Road / I-15 interchange, as well as daily link capacity issues (see section 5.5.2 of this report), interchange improvements are needed at this location.

While the intersection of Masters Drive at Eagle Glen Parkway meets traffic signal warrants under existing conditions, it is anticipated to operate at acceptable levels of service under 2014 with project (Phase 1) conditions, therefore, no improvements are recommended.

Table 5-2
(1 of 2)

2014 With Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at:																		
	• California Dr. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	--[4]	13.4	F	B	C
	- With Improvements	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	15.7	11.3	B	B	C
2	Masters Dr. (NS) at:																		
	• Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	9.5	11.4	A	B	C
3	Masters Dr. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	14.5	27.6	B	D	D
4	Bedford Cyn. Rd. (NS) at:																		
	• El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	17.9	21.3	B	C	D
5	Bedford Cyn. Rd. (NS) at:																		
	• Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	9.1	9.9	A	A	C
6	Bedford Cyn. Rd. (NS) at:																		
	• Eagle Glen Pkwy. (EW)																		
	- With Improvements	TS	**1**	**1**	**1>**	**2**	**1**	1>	1	2	0	**1**	2	1>	32.4	36.1	C	D	D
7	I-15 SB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	22.0	25.6	C	C	D
8	I-15 SB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	33.2	--[4]	C	F	E
	- With Improvements	TS	0	0	0	1	0	1	**2**	1	0	0	1	0	18.2	30.6	B	C	E
9	I-15 NB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	35.9	29.5	D	C	D
10	I-15 NB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	49.7	31.4	D	C	E
11	Grand Oaks (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	14.9	24.7	B	C	D
12	Temescal Cyn. Rd. (NS) at:																		
	• Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	37.9	39.5	D	D	D

Table 5-2
(2 of 2)

2014 With Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
13	St. C (NS) at: • Eagle Glen Pkwy. (EW) - With Improvements	**TS**	**1**	0	**1**	0	0	0	0	2	0	**1**	2	0	14.2	23.3	B	C	D
14	St. C (NS) at: • St. B (EW) - With Improvements	**CSS**	0	**1!**	0	0	**1!**	0	0	0	0	0	**1!**	0	9.5	9.4	A	A	D
15	St. A (NS) at: • Dwy. 1 (EW) - With Improvements	**CSS**	0	**1!**	0	0	**1!**	0	0	**1!**	0	0	0	0	11.9	13.8	B	B	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

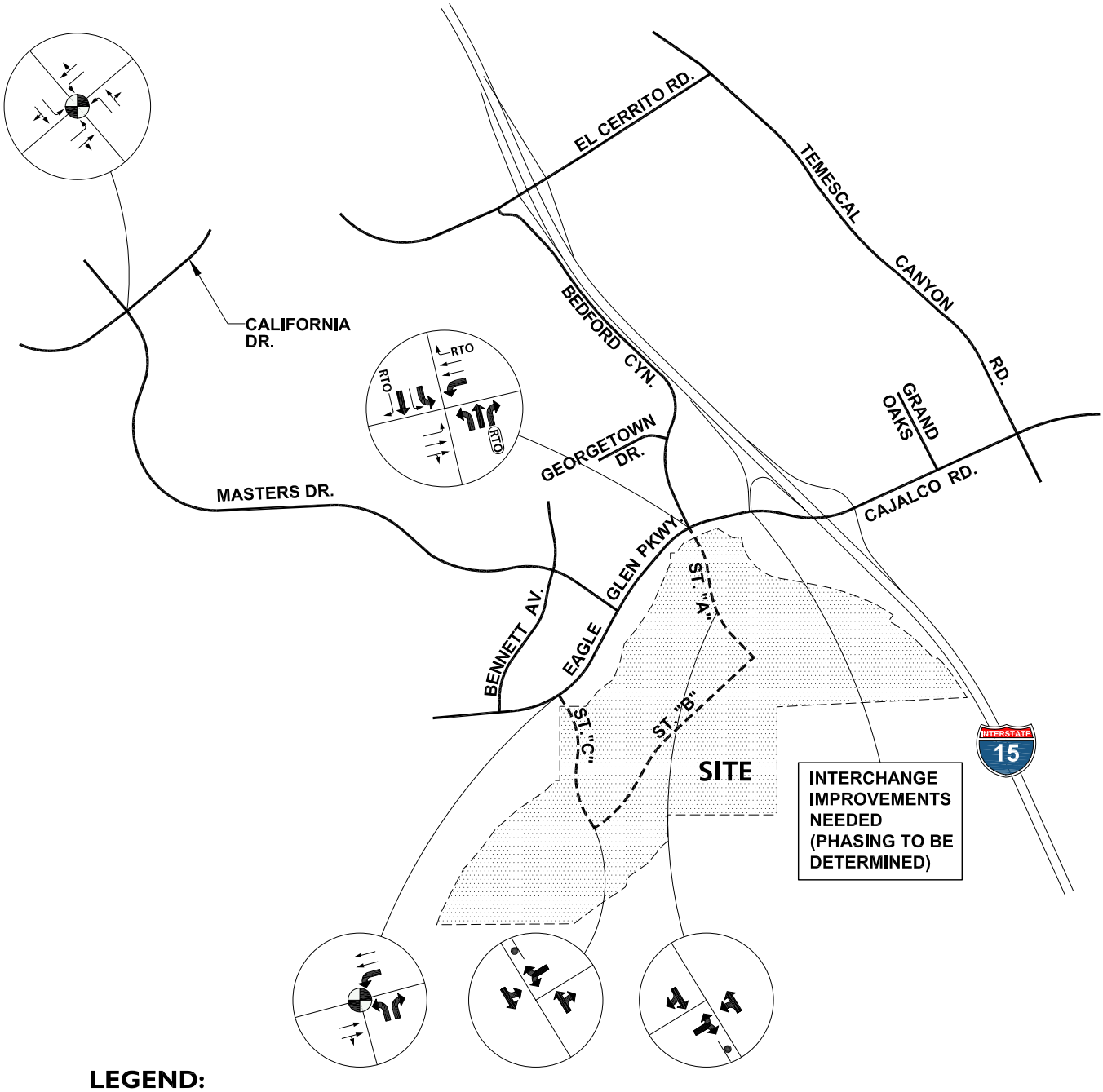
[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

EXHIBIT 5-2

RECOMMENDED INTERSECTION IMPROVEMENTS FOR 2014 WITH PROJECT CONDITIONS



LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENTS
- = PREVIOUS PHASE IMPROVEMENTS
- RTO = RIGHT TURN OVERLAP
- (RTO) = CURRENT PHASE RIGHT TURN OVERLAP IMPROVEMENT

N

Exhibit 5-2 illustrates the recommended intersection improvements for 2014 with project (Phase 1) conditions, with the following intersections include improvements to accommodate new project access:

Street C (NS) at:

- Eagle Glen Parkway (EW) [13]
- Street B (EW) [14]

Street A (NS) at:

- Driveway 1 (EW) [15]

2014 with project (Phase 1) conditions intersection operations analysis worksheets are included in Appendix 5.3 of this report.

5.2.3 Intersection Operations Analysis, 2019 Without Project Conditions

Table 5-3 summarizes the intersection operations analysis results at the study area intersections for 2019 without project conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for 2019 without project conditions were shown previously on Exhibits 3-17 and 3-18, respectively.

As shown in Table 5-3, the following study area intersection is anticipated to operate at unacceptable levels of service during the peak hours for 2019 without project conditions, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS D

However, with the recommended intersection improvements illustrated on Exhibit 5-1, all of the study area intersections are projected to operate at acceptable levels of service for 2019 without project conditions. While the intersection of Masters Drive at Eagle Glen Parkway meets traffic signal warrants under existing conditions, it is anticipated to operate at acceptable levels of service under 2019 without project conditions, therefore, no improvements are recommended.

Table 5-3

2019 Without Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at:																		
	• California Dr. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	--[4]	11.9	F	B	C
	- With Improvements	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	13.6	11.3	B	B	C
2	Masters Dr. (NS) at:																		
	• Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	8.5	10.1	A	B	C
3	Masters Dr. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	11.3	15.6	B	C	D
4	Bedford Cyn. Rd. (NS) at:																		
	• El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	17.4	19.7	B	B	D
5	Bedford Cyn. Rd. (NS) at:																		
	• Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	9.0	9.5	A	A	C
6	Bedford Cyn. Rd. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	TS	0	0	0	1	0	1>	1	2	0	0	2	1>	18.6	25.6	B	C	D
7	I-15 SB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	24.3	27.9	C	C	D
8	I-15 SB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	26.3	42.2	C	D	E
9	I-15 NB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	37.3	30.3	D	C	D
10	I-15 NB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	29.7	49.4	C	D	E
11	Grand Oaks (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	15.3	24.8	B	C	D
12	Temescal Cyn. Rd. (NS) at:																		
	• Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	41.1	41.8	D	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

2019 without project conditions intersection operations analysis worksheets are included in Appendix 5.4 of this report.

5.2.4 Intersection Operations Analysis, 2019 With Project Conditions

Table 5-4 summarizes the intersection operations analysis results at the study area intersections for 2019 with project (buildout) conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for 2019 with project (buildout) conditions were shown previously on Exhibits 3-20 and 3-21, respectively.

As shown in Table 5-4, the five (5) intersections listed below are anticipated to operate at unacceptable levels of service during the peak hours for 2019 with project (buildout) conditions, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F
- Eagle Glen Parkway (EW) [3] – LOS F

Bedford Canyon Road (NS) at:

- Eagle Glen Parkway (EW) [6] – LOS F

I-15 Southbound Ramps (NS) at:

- Cajalco Road (EW) [8] – LOS F

I-15 Northbound Ramps (NS) at:

- Cajalco Road (EW) [10] – LOS F

However, with the recommended intersection improvements illustrated on Exhibits 5-2 and 5-3, all of the study area intersections are projected to operate at acceptable levels of service for 2019 with project (buildout) conditions. The 2019 with project conditions intersection analysis indicates I-15 Freeway Interchange at Cajalco Road will require reconstruction of the existing Caltrans bridge.

Table 5-4
(1 of 2)

2019 With Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at:																		
	• California Dr. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	--[4]	16.3	F	C	C
	- With Improvements	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	23.8	11.8	C	B	C
2	Masters Dr. (NS) at:																		
	• Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	10.2	15.6	B	C	C
3	Masters Dr. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	21.8	--[4]	C	F	D
	- With Improvements	**TS**	0	0	0	1	0	1	1	2	0	0	2	0	14.4	20.7	B	C	D
4	Bedford Cyn. Rd. (NS) at:																		
	• El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	19.4	25.9	B	C	D
5	Bedford Cyn. Rd. (NS) at:																		
	• Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	9.8	12.3	A	B	C
6	Bedford Cyn. Rd. (NS) at:																		
	• Eagle Glen Pkwy. (EW)																		
	- With Improvements	TS	**1**	**1**	**2>**	**2**	**1**	1>	1	**3**	0	**2**	2	1>	31.6	40.9	C	D	D
7	I-15 SB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	24.1	27.9	C	C	D
8	I-15 SB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	--[4]	--[4]	F	F	E
	- With Improvements	TS	0	0	0	**2**	0	**2**	**2**	**2**	0	0	**2**	0	16.0	26.4	B	C	E
9	I-15 NB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	37.4	26.9	D	C	D
10	I-15 NB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	--[4]	--[4]	F	F	E
	- With Improvements	TS	**2**	0	1	0	0	0	**2**	1	0	0	1	1	26.1	31.2	C	C	E
11	Grand Oaks (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	15.3	25.5	B	C	D

Table 5-4
(2 of 2)

2019 With Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
12	Temescal Cyn. Rd. (NS) at:																		
	• Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	43.0	43.3	D	D	D
13	St. C (NS) at:																		
	• Eagle Glen Pkwy. (EW)																		
	- With Improvements	**TS**	**1**	0	**1**	0	0	0	0	2	0	**1**	2	0	13.0	27.1	B	C	D
14	St. C (NS) at:																		
	• St. B (EW)																		
	- With Improvements	**CSS**	0	**1!**	0	0	**1!**	0	0	**1!**	0	0	**1!**	0	24.6	27.4	C	D	D
15	St. A (NS) at:																		
	• Dwy. 1 (EW)																		
	- With Improvements	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**1**	0	**1**	**1**	**1>**	15.8	26.4	B	C	D
16	St. A (NS) at:																		
	• St. B (EW)																		
	- With Improvements	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**1**	0	**1**	**1**	**1**	10.1	12.8	B	B	D

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

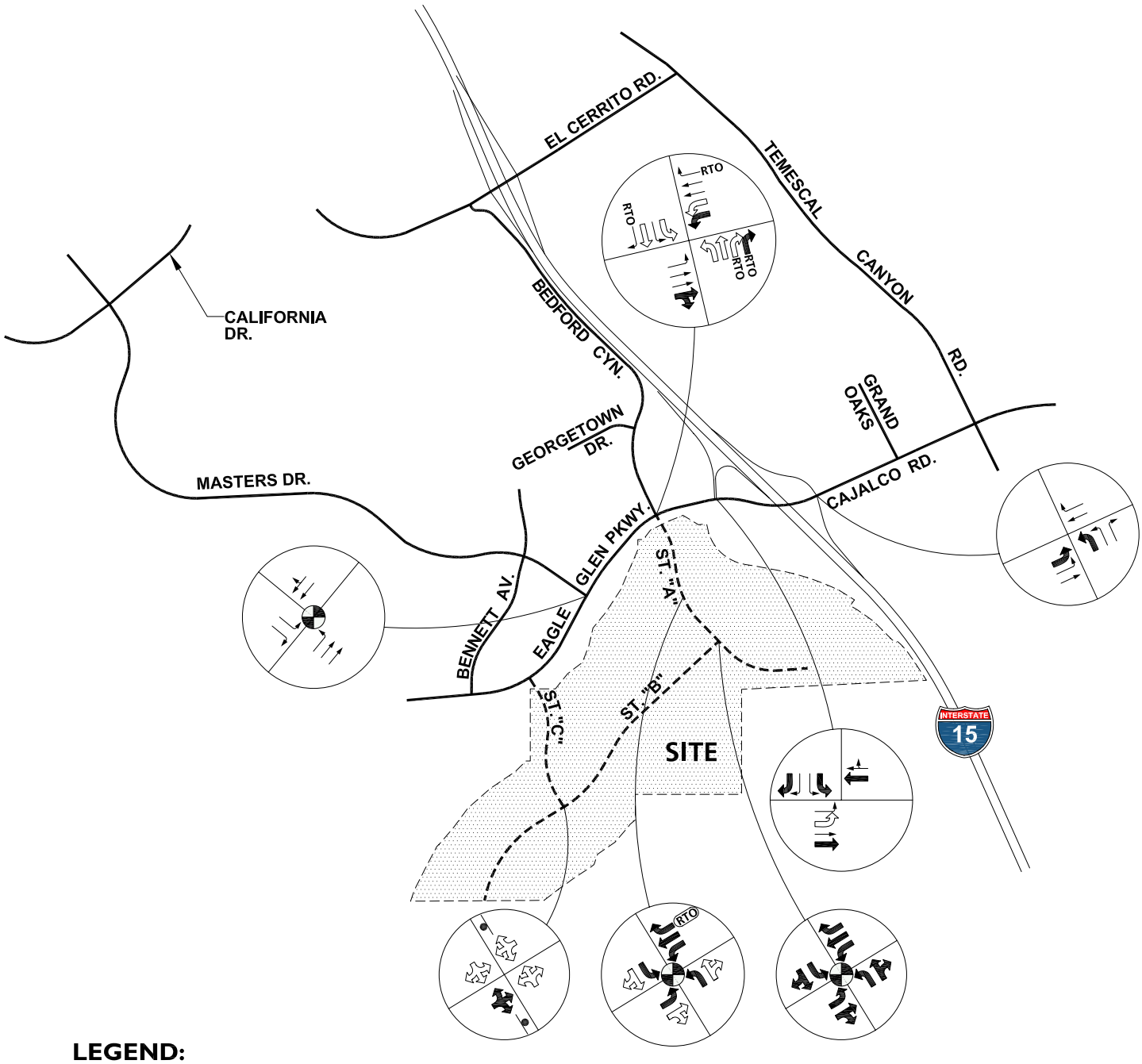
2 Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

3 AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

4 -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

EXHIBIT 5-3

ADDITIONAL RECOMMENDED INTERSECTION IMPROVEMENTS FOR 2019 WITH PROJECT CONDITIONS



LEGEND:

- = TRAFFIC SIGNAL
- = STOP SIGN
- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENTS
- = PREVIOUS PHASE IMPROVEMENTS
- RTO = RIGHT TURN OVERLAP
- (RTO) = CURRENT PHASE RIGHT TURN OVERLAP IMPROVEMENT

N

Exhibit 5-3 illustrates the recommended intersection improvements for 2019 with project (buildout) conditions, with the following intersections include improvements to accommodate new project access:

Street C (NS) at:

- Eagle Glen Parkway (EW) [13]
- Street B (EW) [14]

Street A (NS) at:

- Driveway 1 (EW) [15]
- Street B (EW) [16]

2019 with project (buildout) conditions intersection operations analysis worksheets are included in Appendix 5.5 of this report.

5.2.5 Intersection Operations Analysis, 2035 Without Project Conditions

Table 5-5 summarizes the intersection operations analysis results at the study area intersections for 2035 without project conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for 2035 without project conditions were shown previously on Exhibits 3-23 and 3-24, respectively.

As shown in Table 5-5, the following three (3) existing study area intersections are anticipated to operate at unacceptable levels of service during the peak hours for 2035 without project conditions, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F

I-15 Southbound Ramps (NS) at:

- El Cerrito Road (EW) [7] – LOS F

Temescal Canyon Road (NS) at:

- Cajalco Road (EW) [12] – LOS F

Table 5-5
(1 of 2)

2035 Without Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at:																		
	• California Dr. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	--[4]	13.9	F	B	C
	- With Improvements	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	12.0	11.1	B	B	C
2	Masters Dr. (NS) at:																		
	• Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	8.7	17.0	A	C	C
3	Masters Dr. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	15.3	32.7	C	D	D
4	Bedford Cyn. Rd. (NS) at:																		
	• El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	29.2	25.3	C	C	D
5	Bedford Cyn. Rd. (NS) at:																		
	• Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	17.3	10.6	C	B	C
6	Bedford Cyn. Rd. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	TS	0	0	0	1	0	1>	1	2	0	0	2	1>	19.8	24.5	B	C	D
7	I-15 SB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	--[4]	--[4]	F	F	D
	- With Improvements	TS	0	0	0	1	0	**2**	0	2	**1**	1	2	0	26.4	27.0	C	C	D
8	I-15 SB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	33.1	52.5	C	D	E
9	I-15 NB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	48.9	32.6	D	C	D
10	I-15 NB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	37.4	78.3	D	E	E
11	Grand Oaks (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	16.9	26.6	B	C	D

Table 5-5
(2 of 2)

2035 Without Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
12	Temescal Cyn. Rd. (NS) at:																		
	• Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	--[4]	--[4]	F	F	D
	- With Improvements	TS	2	**2**	1	**2**	2	0	1	**2**	1	1	3	**1>**	37.2	38.5	D	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

The recommended 2035 without project intersection improvements are illustrated on Exhibits 5-1 and 5-4. While the intersection of Masters Drive at Eagle Glen Parkway and Bedford Avenue at Georgetown Drive both meet traffic signal warrants under existing and 2035 without project conditions, they will operate at acceptable levels of service under 2035 without project conditions, therefore, no improvements are recommended. The 2035 without project conditions intersection operations analysis worksheets are included in Appendix 5.6 of this report.

5.2.6 Intersection Operations Analysis, 2035 With Project Conditions

Table 5-6 summarizes the intersection operations analysis results at the study area intersections for 2035 with project conditions, based on the existing geometrics at the intersections. AM and PM peak hour intersection turning movement volumes for 2035 with project conditions were shown previously on Exhibits 3-26 and 3-27, respectively.

As shown in Table 5-6, the eight (8) existing intersections listed below are anticipated to operate at unacceptable levels of service during the peak hours for 2035 with project conditions, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F
- Bennett Avenue (EW) [2] – LOS F
- Eagle Glen Parkway (EW) [3] – LOS F

Bedford Canyon Road (NS) at:

- Eagle Glen Parkway (EW) [6] – LOS F

I-15 Southbound Ramps (NS) at:

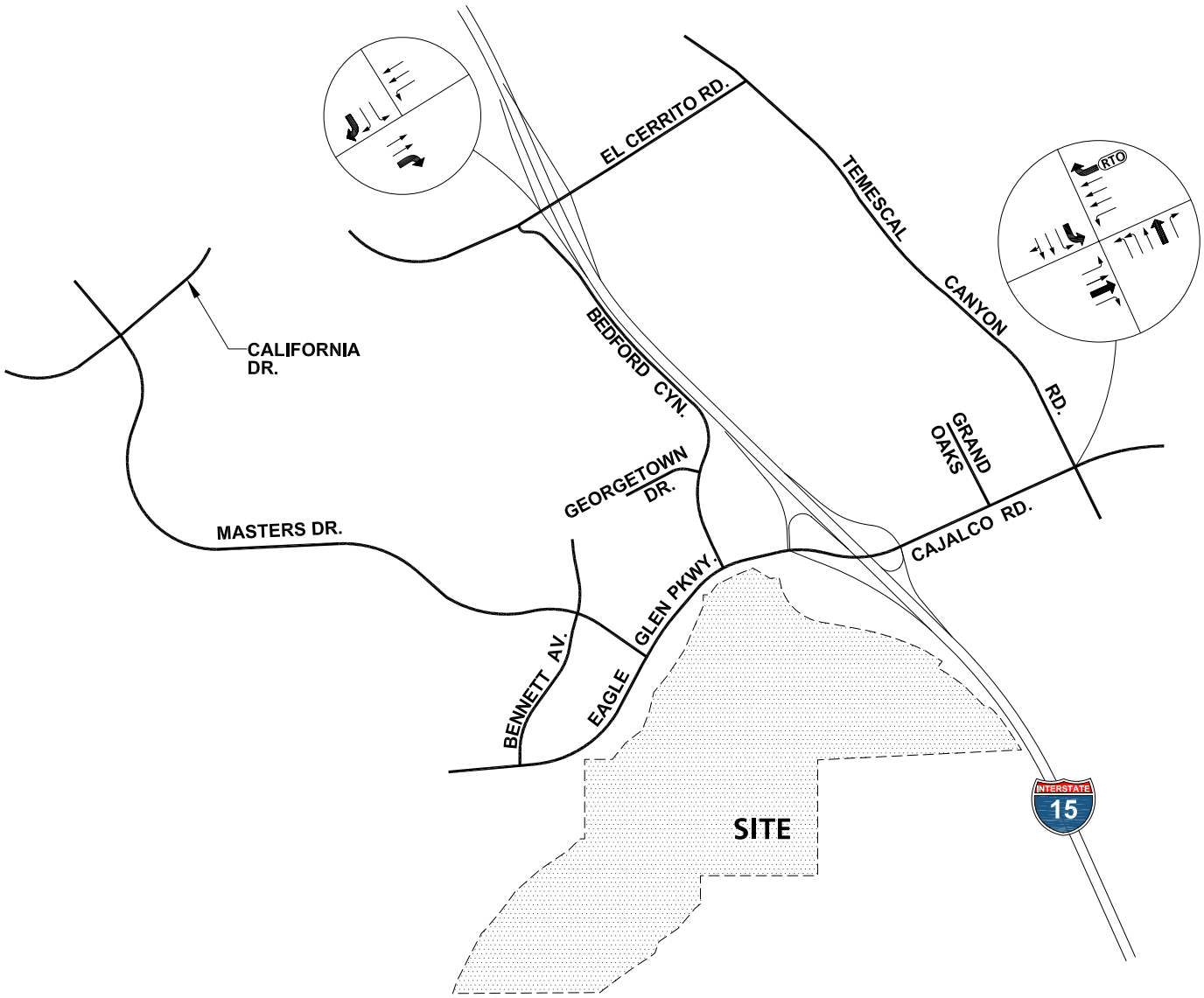
- El Cerrito Road (EW) [7] – LOS F
- Cajalco Road (EW) [8] – LOS F

I-15 Northbound Ramps (NS) at:

- Cajalco Road (EW) [10] – LOS F

EXHIBIT 5-4

RECOMMENDED INTERSECTION IMPROVEMENTS FOR 2035 WITHOUT PROJECT CONDITIONS



LEGEND:

- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENTS
- RTO = RIGHT TURN OVERLAP
- (RTO) = CURRENT PHASE RIGHT TURN OVERLAP IMPROVEMENT

N

Table 5-6
(1 of 2)

2035 With Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
1	Masters Dr. (NS) at:																		
	• California Dr. (EW)	AWS	1	1	0	1	1	0	1	1	0	1	1	1	--[4]	20.7	F	C	C
	- With Improvements	**TS**	1	1	0	1	1	0	1	1	0	1	1	1	13.4	12.5	B	B	C
2	Masters Dr. (NS) at:																		
	• Bennett Av. (EW)	AWS	1	1	0	1	1	0	0	1!	0	0	1!	0	10.4	--[4]	B	F	C
	- With Improvements	**TS**	1	1	0	1	1	0	0	1!	0	0	1!	0	7.8	9.4	A	A	C
3	Masters Dr. (NS) at:																		
	• Eagle Glen Pkwy. (EW)	AWS	0	0	0	1	0	1	1	2	0	0	2	0	37.1	--[4]	E	F	D
	- With Improvements	**TS**	0	0	0	1	0	1	1	2	0	0	2	0	16.3	26.8	B	C	D
4	Bedford Cyn. Rd. (NS) at:																		
	• El Cerrito Rd. (EW)	TS	1	0	1	0	0	0	0	2	0	1	2	0	32.7	38.2	C	D	D
5	Bedford Cyn. Rd. (NS) at:																		
	• Georgetown Dr. (EW)	AWS	1	1	0	0	1	1	0	1	1>>	0	1!	0	23.5	14.6	C	B	C
6	Bedford Cyn. Rd. (NS) at:																		
	• Eagle Glen Pkwy. (EW)																		
	- With Improvements	TS	**1**	**1**	**2>**	**2**	**1**	1>	1	**3**	0	**2**	2	1>	27.5	37.9	C	D	D
7	I-15 SB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	0	0	1	0	1	0	2	0	1	2	0	--[4]	--[4]	F	F	D
	- With Improvements	TS	0	0	0	1	0	**2**	0	2	**1**	1	2	0	26.4	26.7	C	C	D
8	I-15 SB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	1	1	1	0	0	1	0	--[4]	--[4]	F	F	E
	- With Improvements	TS	0	0	0	**2**	0	**2**	**0**	**3**	**1**	0	**2**	**1**	11.7	20.2	B	C	E
9	I-15 NB Ramps (NS) at:																		
	• El Cerrito Rd. (EW)	TS	0	1!	0	0	0	0	2	1	0	0	2	0	49.6	34.1	D	C	D
10	I-15 NB Ramps (NS) at:																		
	• Cajalco Rd. (EW)	TS	1	0	1	0	0	0	1	1	0	0	1	1	--[4]	--[4]	F	F	E
	- With Improvements	TS	**2**	0	1	0	0	0	**0**	**3**	**1**	0	**3**	1	17.1	17.7	B	B	E
11	Grand Oaks (NS) at:																		
	• Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	2	0	0	3	1	16.8	27.3	B	C	D

Table 5-6
(2 of 2)

2035 With Project Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service		LOS Std.
			Northbound			Southbound			Eastbound			Westbound							
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	
12	Temescal Cyn. Rd. (NS) at:																		
	• Cajalco Rd. (EW)	TS	2	1	1	1	2	0	1	1	1	1	3	0	--[4]	--[4]	F	F	D
	- With Improvements	TS	2	**2**	1	**2**	2	0	1	**2**	1	1	3	**1>**	35.1	36.8	D	D	D
13	St. C (NS) at:																		
	• Eagle Glen Pkwy. (EW)																		
	- With Improvements	**TS**	**1**	0	**1**	0	0	0	0	2	0	**1**	2	0	13.2	27.7	B	C	D
14	St. C (NS) at:																		
	• St. B (EW)																		
	- With Improvements	**CSS**	0	**1!**	0	0	**1!**	0	0	**1!**	0	0	**1!**	0	24.6	27.4	C	D	D
15	St. A (NS) at:																		
	• Dwy. 1 (EW)																		
	- With Improvements	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**1**	0	**1**	**1**	**1>**	15.8	26.4	B	C	D
16	St. A (NS) at:																		
	• St. B (EW)																		
	- With Improvements	**TS**	**1**	**1**	0	**1**	**1**	0	**1**	**1**	0	**1**	**1**	**1**	10.1	12.8	B	B	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.
L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap 1>> = Free-Right

[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] AWS = All-Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

[4] -- = Average Delay >100 or Critical Vol/Cap >1.0; Intersection Unstable; Level of Service "F".

Temescal Canyon Road (NS) at:

- Cajalco Road (EW) [12] – LOS F

However, with the recommended intersection improvements illustrated on Exhibits 5-2, 5-3, 5-4 and 5-5, all of the study area intersections are projected to operate at acceptable levels of service for 2035 with project conditions. While the intersection of Bedford Avenue at Georgetown Drive meets traffic signal warrants under 2035 without project conditions, it is anticipated to operate at acceptable levels of service under 2035 with project conditions, therefore, no improvements are recommended.

Exhibit 5-5 illustrates the recommended intersection improvements for 2035 with project conditions, with the following intersections include improvements to accommodate new project access:

Street C (NS) at:

- Eagle Glen Parkway (EW) [13]
- Street B (EW) [14]

Street A (NS) at:

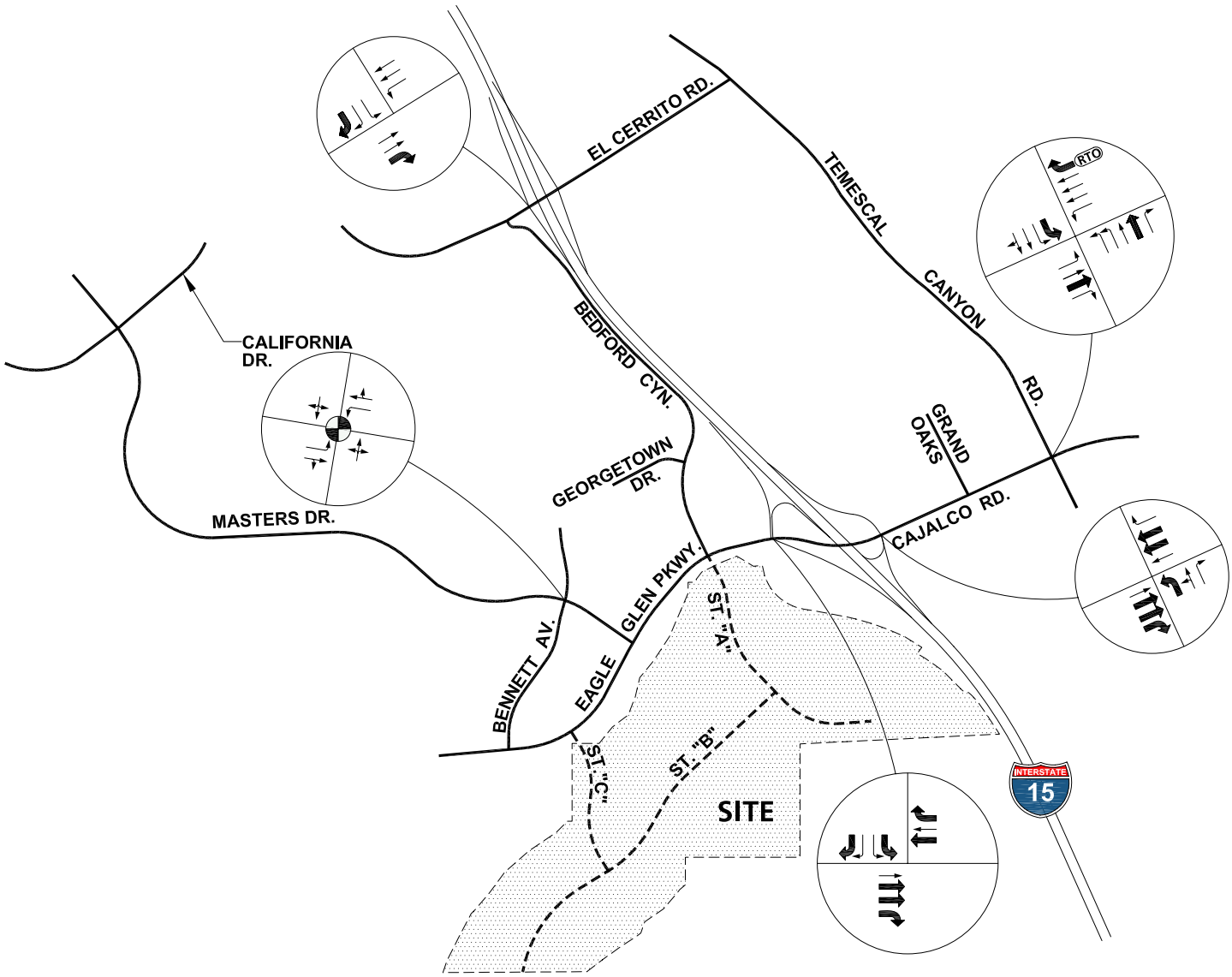
- Driveway 1 (EW) [15]
- Street B (EW) [16]

The 2035 with project conditions intersection analysis indicates I-15 Freeway Interchange at Cajalco Road will require reconstruction of the existing Caltrans bridge and reconfiguration of the existing freeway on ramps. The recommended improvements are consistent with the design found on Attachment "C" in the *Project Report on Interstate 15 From 0.7 Miles South of Cajalco Road to 0.8 Miles North of Cajalco Road*.

The 2035 with project conditions intersection operations analysis worksheets are included in Appendix 5.7 of this report.

EXHIBIT 5-5

ADDITIONAL RECOMMENDED INTERSECTION IMPROVEMENTS FOR 2035 WITH PROJECT CONDITIONS



LEGEND:

- = TRAFFIC SIGNAL
- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENTS
- = PREVIOUS PHASE IMPROVEMENTS
- RTO = RIGHT TURN OVERLAP
- (RTO) = CURRENT PHASE RIGHT TURN OVERLAP IMPROVEMENT

N

5.3 Future Conditions Ramp Metering Analysis

A discussion of the methodologies behind the ramp metering analysis was previously presented in Section 4.5 of this report. The ramp metering analysis results have been calculated based on the ramp metered lane traffic flow threshold outlined in the Caltrans Ramp Meter Design Manual. The number of required ramp metered lane is determined based on a threshold of 900 vehicles per hour for each lane. It should be noted that all the on-ramps currently do not have ramp metering except for the the I-15 Northbound On-Ramp at El Cerrito Road where the two-lane on-ramp has a one metered lane and one free-flow lane.

5.3.1 2014 Without Project Conditions, Ramp Metering Analysis

The ramp metering analysis results for 2014 without project conditions are summarized in Table 5-7. Table 5-7 indicates that the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lanes

5.3.2 2014 With Project Conditions, Ramp Metering Analysis

The ramp metering analysis results for 2014 with project conditions are summarized in Table 5-8. Table 5-8 indicates that the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lanes

Table 5-7

2014 Without Project Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	378	677	1
2	I-15 Northbound On-Ramp at El Cerrito Road	687	322	1
3	I-15 Southbound On-Ramp at Cajalco Road	197	439	1
4	I-15 Northbound On-Ramp at Cajalco Road	1,018	588	2

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

Table 5-8

2014 With Project Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	378	677	1
2	I-15 Northbound On-Ramp at El Cerrito Road	687	322	1
3	I-15 Southbound On-Ramp at Cajalco Road	280	544	1
4	I-15 Northbound On-Ramp at Cajalco Road	1,239	835	2

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

5.3.3 2019 Without Project Conditions, Ramp Metering Analysis

The ramp metering analysis results for 2019 without project conditions are summarized in Table 5-9, with the reconfiguration of the I-15 interchange at Cajalco Road. Table 5-9 indicates that the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lane

5.3.4 2019 With Project Conditions, Ramp Metering Analysis

The ramp metering analysis results for 2019 with project conditions are summarized in Table 5-10, with the reconfiguration of the I-15 interchange at Cajalco Road. Table 5-10 indicates that the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lanes

5.3.5 2035 Without Project Conditions, Ramp Metering Analysis

The ramp metering analysis results for 2035 without project conditions are summarized in Table 5-11, with the reconfiguration of the I-15 interchange at Cajalco Road. Table 5-11 indicates that the following number of ramp metered lanes are needed for each on-ramp location:

Table 5-9

2019 Without Project Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	436	725	1
2	I-15 Northbound On-Ramp at El Cerrito Road	723	370	1
3	I-15 Southbound On-Ramp at Cajalco Road	225	447	1
4	I-15 Northbound On-Ramp at Cajalco Road	1,054	614	2

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

Table 5-10

2019 With Project Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	436	725	1
2	I-15 Northbound On-Ramp at El Cerrito Road	723	370	1
3	I-15 Southbound On-Ramp at Cajalco Road	391	745	1
4	I-15 Northbound On-Ramp at Cajalco Road	1,472	1,206	2

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

Table 5-11

2035 Without Project Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	704	900	1
2	I-15 Northbound On-Ramp at El Cerrito Road	852	578	1
3	I-15 Southbound On-Ramp at Cajalco Road	190	187	1
3a	I-15 Southbound New Slip On-Ramp at Cajalco Road	164	290	1
4a	I-15 Northbound New Loop On-Ramp at Cajalco Road	362	257	1
4	I-15 Northbound On-Ramp at Cajalco Road	817	449	1

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 1 lane

5.3.6 2035 With Project Conditions, Ramp Metering Analysis

The ramp metering analysis results for 2035 with project conditions are summarized in Table 5-12, with the reconfiguration of the I-15 interchange at Cajalco Road. Table 5-12 indicates that the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 1 lane

5.4 Future Conditions Ramp Merge and Diverge Analysis

The ramp merge and diverge analysis results have been calculated based on the existing number of freeway mainline travel lanes for each of the following conditions:

- 2014 without project conditions
- 2014 with project (Phase 1) conditions
- 2019 without project conditions
- 2019 with project (Phase 2) conditions
- 2035 without project conditions
- 2035 with project conditions

Table 5-12

2035 With Project Conditions

Ramp Metering Analysis Summary

On-Ramp Location		Peak Hour Traffic		Required Number of Ramp Metered Lanes[1]
No.	Name	AM	PM	
1	I-15 Southbound On-Ramp at El Cerrito Road	704	900	1
2	I-15 Northbound On-Ramp at El Cerrito Road	852	578	1
3	I-15 Southbound On-Ramp at Cajalco Road	190	187	1
3a	I-15 Southbound New Slip On-Ramp at Cajalco Road	330	588	1
4a	I-15 Northbound New Loop On-Ramp at Cajalco Road	780	849	1
4	I-15 Northbound On-Ramp at Cajalco Road	817	449	1

[1] = Ramp metered lane traffic flow threshold is 900 vehicles per hour (vph).

5.4.1 2014 Without Project Conditions Ramp Merge and Diverge Analysis,

Table 5-13 presents the 2014 without project conditions ramp merge and diverge analysis. The ramp merge and diverge analysis worksheets for 2014 without project conditions are included in Appendix 5.8 of this report.

5.4.2 2014 With Project Conditions Ramp Merge and Diverge Analysis,

Table 5-14 presents the 2014 with project conditions ramp merge and diverge analysis. The ramp merge and diverge analysis worksheets for 2014 with project conditions are included in Appendix 5.9 of this report.

5.4.3 2019 Without Project Conditions Ramp Merge and Diverge Analysis,

Table 5-15 presents the 2019 without project conditions ramp merge and diverge analysis. The ramp merge and diverge analysis worksheets for 2019 without project conditions are included in Appendix 5.10 of this report.

5.4.4 2019 With Project Conditions Ramp Merge and Diverge Analysis,

Table 5-16 presents the 2019 with project conditions ramp merge and diverge analysis. The ramp merge and diverge analysis worksheets for 2019 with project conditions are included in Appendix 5.11 of this report.

5.4.5 2035 Without Project Conditions Ramp Merge and Diverge Analysis,

Table 5-17 presents the 2035 without project conditions ramp merge and diverge analysis. The ramp merge and diverge analysis worksheets for 2035 without project conditions are included in Appendix 5.12 of this report.

Table 5-13

2014 Without Project Conditions

Ramp Merge and Diverge Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15	Southbound	El Cerrito Off-Ramp	Diverge	336	438	3	1	31.0	36.0	F	F
		El Cerrito On-Ramp[2]	Weave	378	677	3+1	1	42.2	50.6	E	F
		Cajalco Off-Ramp[2]	Weave	449	683	3+1	1				
		Cajalco On-Ramp	Merge	197	439	3	1	37.5	43.4	F	F
	Northbound	El Cerrito On-Ramp	Merge	687	322	3	1	45.5	39.2	F	F
		El Cerrito Off-Ramp	Diverge	481	244	3	1	49.1	43.2	F	F
		Cajalco On-Ramp	Merge	1,018	588	3	2	44.7	39.6	F	F
		Cajalco Off-Ramp	Diverge	151	333	3	1	40.6	40.7	F	F

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

Table 5-14

2014 With Project Conditions

Ramp Merge and Diverge Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15	Southbound	El Cerrito Off-Ramp	Diverge	336	438	3	1	33.0	38.3	F	F
		El Cerrito On-Ramp[2]	Weave	378	677	3+1	1	44.7	54.1	F	F
		Cajalco Off-Ramp[2]	Weave	645	953	3+1	1				
		Cajalco On-Ramp	Merge	280	544	3	1	38.2	44.3	F	F
	Northbound	El Cerrito On-Ramp	Merge	687	322	3	1	47.5	41.4	F	F
		El Cerrito Off-Ramp	Diverge	481	244	3	1	51.3	45.6	F	F
		Cajalco On-Ramp	Merge	1,239	835	3	2	46.6	41.7	F	F
		Cajalco Off-Ramp	Diverge	238	425	3	1	41.4	41.6	F	F

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

Table 5-15

2019 Without Project Conditions

Ramp Merge and Diverge Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15	Southbound	El Cerrito Off-Ramp	Diverge	405	472	3	1	33.5	40.0	F	F
		El Cerrito On-Ramp[2]	Weave	436	725	3+1	1	44.4	54.3	F	F
		Cajalco Off-Ramp[2]	Weave	479	758	3+1	1				
		Cajalco On-Ramp	Merge	225	447	3	1	39.7	46.9	F	F
	Northbound	El Cerrito On-Ramp	Merge	723	370	3	1	51.4	46.6	F	F
		El Cerrito Off-Ramp	Diverge	518	291	3	1	55.7	51.3	F	F
		Cajalco On-Ramp	Merge	1,054	614	3	1	50.7	47.0	F	F
		Cajalco Off-Ramp	Diverge	156	369	3	1	46.8	48.9	F	F

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

[3] Volume changes with the new I-15 southbound slip ramp at the Cajalco Interchange.

[4] Volume changes with the new I-15 northbound loop ramp at the Cajalco Interchange.

Table 5-16

2019 With Project Conditions

Ramp Merge and Diverge Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15	Southbound	El Cerrito Off-Ramp	Diverge	405	472	3	1	36.6	46.3	F	F
		El Cerrito On-Ramp[2]	Weave	436	725	3+1	1	48.5	64.1	F	F
		Cajalco Off-Ramp[2]	Weave	789	1,401	3+1	1				
		Cajalco On-Ramp	Merge	391	745	3	1	41.1	49.4	F	F
	Northbound	El Cerrito On-Ramp	Merge	723	370	3	1	55.2	51.9	F	F
		El Cerrito Off-Ramp	Diverge	518	291	3	1	59.8	57.2	F	F
		Cajalco On-Ramp	Merge	1,472	1,206	3	1	54.2	52.0	F	F
		Cajalco Off-Ramp	Diverge	303	675	3	1	48.3	51.9	F	F

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

[3] Volume changes with the new I-15 southbound slip ramp at the Cajalco Interchange.

[4] Volume changes with the new I-15 northbound loop ramp at the Cajalco Interchange.

Table 5-17

2035 Without Project Conditions

Ramp Merge and Diverge Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15	Southbound	El Cerrito Off-Ramp	Diverge	754	606	3	1	42.6	54.6	F	F
		El Cerrito On-Ramp[2]	Weave	704	900	3+1	1	52.7	68.1	F	F
		Cajalco Off-Ramp[2]	Weave	602	931	3+1	1				
		Cajalco On-Ramp	Merge	354	477	3	1	47.1	59.1	F	F
		- With Improvements[3]	*Merge*	*190*	*187*	*3*	*1*	*45.7*	*56.7*	*F*	*F*
		New Cajalco Slip On-Ramp	*Merge*	*164*	*290*	*3*	*1*	*47.2*	*59.3*	*F*	*F*
	Northbound	El Cerrito On-Ramp	Merge	852	578	3	1	74.6	77.2	F	F
		El Cerrito Off-Ramp	Diverge	*663*	*524*	*3*	*1*	*81.4*	*85.5*	*F*	*F*
		Cajalco On-Ramp	Merge	1,179	706	3	2	74.0	77.9	F	F
		- With Improvements[4]	*Merge*	*817*	*449*	*3*	*1*	*74.2*	*78.0*	*F*	*F*
		New Cajalco Loop On-Ramp	*Merge*	362	257	3	1	67.7	74.8	F	F
		Cajalco Off-Ramp	Diverge	174	523	3	1	71.5	83.7	F	F

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

[3] Volume changes with the new I-15 southbound slip ramp at the Cajalco Interchange.

[4] Volume changes with the new I-15 northbound loop ramp at the Cajalco Interchange.

5.4.6 2035 With Project Conditions Ramp Merge and Diverge Analysis,

Table 5-18 presents the 2035 with project conditions ramp merge and diverge analysis. The ramp merge and diverge analysis worksheets for 2035 with project conditions are included in Appendix 5.13 of this report.

5.5 Future Condtions Roadway Link Analysis

A discussion of the methodologies behind the roadway link capacity analysis was previously presented in Section 4.7 of this report. The road link analysis results have been calculated based on the link capacities for each of the General Plan roadway classifications provided by the Estimated 24 hour Traffic (ADT)" of the City of Corona Street Design Table as shown on Table 4.2.

5.5.1 2014 Without Project Conditions, Roadway Link Analysis

The Roadway Link Analysis results for 2014 without project conditions are summarized in Table 5-19. Table 5-19 indicates that out of the total 25 study area roadway segments:

- 20 roadway segments provide "Acceptable" capacity to satisfy daily vehicle traffic demand.
- 2 roadway segments begin to "Approach Capacity" where speed and freedom to maneuver are severely restricted at certain times of the day.
- 3 roadway segments "Potentially Exceed Capacity" or "Exceed Capacity" creating potential vehicle delays particularly during the peak hours.

5.5.2 2014 With Project Conditions, Roadway Link Analysis

The Roadway Link Analysis results for 2014 with project conditions are summarized in Table 5-20. Table 5-20 indicates that out of the total 32 with project study area roadway segments (including the on-site project roads):

- 25 roadway segments provide "Acceptable" capacity to satisfy daily vehicle traffic demand.

Table 5-18

2035 With Project Conditions

Ramp Merge and Diverge Analysis Summary

Freeway		Ramp Junction	Junction Type	Ramp Traffic		Main-Line Lanes	Ramp Lanes	Density[1] (pc/mi/ln)		Level of Service	
				AM	PM			AM	PM	AM	PM
I-15	Southbound	El Cerrito Off-Ramp	Diverge	754	606	3	1	45.6	60.9	F	F
		El Cerrito On-Ramp[2]	Weave	704	900	3+1	1	57.2	78.7	F	F
		Cajalco Off-Ramp[2]	Weave	912	1,574	3+1	1				
		Cajalco On-Ramp	Merge	520	775	3	1	48.5	61.7	F	F
		- With Improvements[3]	*Merge*	*190*	*187*	*3*	*1*	*45.7*	*56.7*	*F*	*F*
		New Cajalco Slip On-Ramp	*Merge*	*330*	*588*	*3*	*1*	*48.6*	*61.8*	*F*	*F*
	Northbound	El Cerrito On-Ramp	Merge	852	578	3	1	78.3	82.5	F	F
		El Cerrito Off-Ramp	Diverge	*663*	*524*	*3*	*1*	*85.5*	*91.3*	*F*	*F*
		Cajalco On-Ramp	Merge	1,597	1,298	3	2	77.5	82.9	F	F
		- With Improvements[4]	*Merge*	*817*	*449*	*3*	*1*	*78.4*	*83.3*	*F*	*F*
		New Cajalco Loop On-Ramp	*Merge*	780	849	3	1	71.2	79.7	F	F
		Cajalco Off-Ramp	Diverge	321	829	3	1	73.0	86.7	F	F

[1] Density calculated based on the Highway Capacity Manual (HCM) analysis; (pc/mi/ln) = passenger car per mile per lane

[2] Weave segment; Ramp distances less than 2,500 feet.

[3] Volume changes with the new I-15 southbound slip ramp at the Cajalco Interchange.

[4] Volume changes with the new I-15 northbound loop ramp at the Cajalco Interchange.

Table 5-19

Year 2014 Without Project Conditions
Roadway Link Capacity Analysis

Roadway	Segment	Through Travel Lanes	Estimated Daily Capacity	2014 Without Project Traffic	Volume/ Capacity Ratio	Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Dr.	2	10,000	500	0.05	Acceptable
	South of California Dr.	2	10,000	8,500	0.85	Approaching Capacity
	North of Bennett Av.	2	10,000	5,800	0.58	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	6,300	0.63	Acceptable
Bennett Av.	North of Masters Dr.	2	10,000	1,500	0.15	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,000	0.10	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	7,100	0.71	Acceptable
	North of Georgetown Dr.	2	10,000	7,000	0.70	Acceptable
	North of Eagle Glen Pkwy.	4	20,000	7,100	0.36	Acceptable
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	12,500	0.63	Acceptable
	South of Cajalco Rd.	4	20,000	14,300	0.72	Acceptable
California Dr.	West of Masters Dr.	2	10,000	4,700	0.47	Acceptable
	East of Masters Dr.	2	10,000	8,700	0.87	Approaching Capacity
El Cerrito Rd.	West of Bedford Cyn.	4	20,000	20,700	1.04	Potentially Exceeds Capacity
	East of Bedford Cyn.	4	20,000	21,700	1.09	Potentially Exceeds Capacity
	East of I-15 NB Ramps	4	20,000	9,700	0.49	Acceptable
Georgetown Dr.	West of Bedford Cyn.	2	10,000	2,300	0.23	Acceptable
Eagle Glen Pkwy./ Cajalco Rd.	East of Bennett Av.	4	20,000	8,700	0.44	Acceptable
	West of Masters Dr.	4	20,000	8,700	0.44	Acceptable
	West of Bedford Cyn.	4	20,000	12,000	0.60	Acceptable
	East of Bedford Cyn.	6	50,000	16,500	0.33	Acceptable
	East of I-15 SB Ramps	2	10,000	18,900	1.89	Exceeds Capacity
	East of I-15 NB Ramps	6	50,000	14,100	0.28	Acceptable
	East of Grand Oaks	6	50,000	12,700	0.25	Acceptable
	East of Temescal Cyn. Rd.	6	50,000	13,200	0.26	Acceptable

Table 5-20

Year 2014 With Project Conditions
Roadway Link Capacity Analysis

Roadway	Segment	Through Travel Lanes	Estimated Daily Capacity	2014 With Project Traffic	Volume/ Capacity Ratio	Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Dr.	2	10,000	5,400	0.54	Acceptable
	South of California Dr.	2	10,000	10,100	1.01	Potentially Exceeds Capacity
	North of Bennett Av.	2	10,000	7,600	0.76	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	8,100	0.81	Approaching Capacity
Bennett Av.	North of Masters Dr.	2	10,000	1,500	0.15	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,000	0.10	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	7,900	0.79	Acceptable
	North of Georgetown Dr.	2	10,000	7,800	0.78	Acceptable
	North of Eagle Glen Pkwy.	4	20,000	8,000	0.40	Acceptable
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	12,700	0.64	Acceptable
	South of Cajalco Rd.	4	20,000	14,800	0.74	Acceptable
California Dr.	West of Masters Dr.	2	10,000	5,100	0.51	Acceptable
	East of Masters Dr.	2	10,000	9,500	0.95	Approaching Capacity
El Cerrito Rd.	West of Bedford Cyn.	4	20,000	21,100	1.06	Potentially Exceeds Capacity
	East of Bedford Cyn.	4	20,000	22,100	1.11	Potentially Exceeds Capacity
	East of I-15 NB Ramps	4	20,000	10,100	0.51	Acceptable
Georgetown Dr.	West of Bedford Cyn.	2	10,000	2,500	0.25	Acceptable
Eagle Glen Pkwy./	East of Bennett Av.	4	20,000	8,900	0.45	Acceptable
Cajalco Rd.	West of Masters Dr.	4	20,000	14,300	0.72	Acceptable
	West of Bedford Cyn.	4	20,000	16,700	0.84	Approaching Capacity
	East of Bedford Cyn.	6	50,000	25,300	0.51	Acceptable
	East of I-15 SB Ramps	2	10,000	24,200	2.42	Exceeds Capacity
	East of I-15 NB Ramps	6	50,000	15,800	0.32	Acceptable
	East of Grand Oaks	6	50,000	14,200	0.28	Acceptable
	East of Temescal Cyn. Rd.	6	50,000	14,000	0.28	Acceptable
Steet "A"	South of Eagle Glen Pkwy.	4	20,000	6,400	0.32	Acceptable
	South of Street "B"	4	20,000		-	Acceptable
Street "B"	West of Street "C"	2	10,000		-	Acceptable
	East of Street "C"	2	10,000	4,600	0.46	Acceptable
	East of Street "A"	2	10,000		-	Acceptable
Street "C"	South of Eagle Glen Pkwy.	2	10,000	5,300	0.53	Acceptable
	South of St. "B"	2	10,000	700	0.07	Acceptable

- 3 roadway segments begin to "Approach Capacity" where speed and freedom to maneuver are severely restricted at certain times of the day.
- 4 roadway segments "Potentially Exceed Capacity" or "Exceed Capacity" creating potential vehicle delays particularly during the peak hours.

5.5.3 2019 Without Project Conditions, Roadway Link Analysis

The Roadway Link Analysis results for 2019 without project conditions are summarized in Table 5-21. Table 5-21 indicates that out of the total 25 study area roadway segments:

- 19 roadway segments provide "Acceptable" capacity to satisfy daily vehicle traffic demand.
- 4 roadway segments begin to "Approach Capacity" where speed and freedom to maneuver are severely restricted at certain times of the day.
- 2 roadway segments "Potentially Exceed Capacity" or "Exceed Capacity" creating potential vehicle delays particularly during the peak hours.

5.5.4 2019 With Project Conditions, Roadway Link Analysis

The Roadway Link Analysis results for 2019 with project conditions are summarized in Table 5-22. Table 5-22 indicates that out of the total 33 with project study area roadway segments (including the on-site project roads):

- 20 roadway segments provide "Acceptable" capacity to satisfy daily vehicle traffic demand.
- 3 roadway segments begin to "Approach Capacity" where speed and freedom to maneuver are severely restricted at certain times of the day.
- 10 roadway segments "Potentially Exceed Capacity" or "Exceed Capacity" creating potential vehicle delays particularly during the peak hours.

5.5.5 2035 Without Project Conditions, Roadway Link Analysis

The Roadway Link Analysis results for 2035 without project conditions are summarized in Table 5-23. Table 5-23 indicates that out of the total 25 study area roadway segments:

Table 5-21

Year 2019 Without Project Conditions
Roadway Link Capacity Analysis

Roadway	Segment	Through Travel Lanes	Estimated Daily Capacity	2019 Without Project Traffic	Volume/ Capacity Ratio	Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Dr.	2	10,000	5,600	0.56	Acceptable
	South of California Dr.	2	10,000	9,200	0.92	Approaching Capacity
	North of Bennett Av.	2	10,000	6,200	0.62	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	6,800	0.68	Acceptable
Bennett Av.	North of Masters Dr.	2	10,000	1,500	0.15	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,100	0.11	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	8,400	0.84	Approaching Capacity
	North of Georgetown Dr.	2	10,000	8,300	0.83	Approaching Capacity
	North of Eagle Glen Pkwy.	4	20,000	8,400	0.42	Acceptable
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	14,900	0.75	Acceptable
	South of Cajalco Rd.	4	20,000	15,600	0.78	Acceptable
California Dr.	West of Masters Dr.	2	10,000	5,400	0.54	Acceptable
	East of Masters Dr.	2	10,000	9,200	0.92	Approaching Capacity
El Cerrito Rd.	West of Bedford Cyn.	4	20,000	22,300	1.12	Potentially Exceeds Capacity
	East of Bedford Cyn.	4	20,000	24,400	1.22	Potentially Exceeds Capacity
	East of I-15 NB Ramps	4	20,000	11,200	0.56	Acceptable
Georgetown Dr.	West of Bedford Cyn.	2	10,000	2,400	0.24	Acceptable
Eagle Glen Pkwy./	East of Bennett Av.	4	20,000	8,900	0.45	Acceptable
Cajalco Rd.	West of Masters Dr.	4	20,000	8,900	0.45	Acceptable
	West of Bedford Cyn.	4	20,000	13,100	0.66	Acceptable
	East of Bedford Cyn.	6	50,000	16,800	0.34	Acceptable
	East of I-15 SB Ramps	4	20,000	19,200	0.96	Approaching Capacity
	East of I-15 NB Ramps	6	50,000	16,200	0.32	Acceptable
	East of Grand Oaks	6	50,000	14,000	0.28	Acceptable
	East of Temescal Cyn. Rd.	6	50,000	16,100	0.32	Acceptable

Table 5-22

Year 2019 With Project Conditions
Roadway Link Capacity Analysis

Roadway	Segment	Through Travel Lanes	Estimated Daily Capacity	2019 With Project Traffic	Volume/ Capacity Ratio	Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Dr.	2	10,000	6,100	0.61	Acceptable
	South of California Dr.	2	10,000	12,100	1.21	Potentially Exceeds Capacity
	North of Bennett Av.	2	10,000	9,600	0.96	Approaching Capacity
	North of Eagle Glen Pkwy.	2	10,000	10,200	1.02	Potentially Exceeds Capacity
Bennett Av.	North of Masters Dr.	2	10,000	1,500	0.15	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,100	0.11	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	10,900	1.09	Potentially Exceeds Capacity
	North of Georgetown Dr.	2	10,000	10,800	1.08	Potentially Exceeds Capacity
	North of Eagle Glen Pkwy.	4	20,000	11,200	0.56	Acceptable
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	15,400	0.77	Acceptable
	South of Cajalco Rd.	4	20,000	16,600	0.83	Approaching Capacity
California Dr.	West of Masters Dr.	2	10,000	6,600	0.66	Acceptable
	East of Masters Dr.	2	10,000	10,400	1.04	Potentially Exceeds Capacity
El Cerrito Rd.	West of Bedford Cyn.	4	20,000	23,900	1.20	Potentially Exceeds Capacity
	East of Bedford Cyn.	4	20,000	25,300	1.27	Potentially Exceeds Capacity
	East of I-15 NB Ramps	4	20,000	12,100	0.61	Acceptable
Georgetown Dr.	West of Bedford Cyn.	2	10,000	2,700	0.27	Acceptable
Eagle Glen Pkwy./ Cajalco Rd.	East of Bennett Av.	4	20,000	9,200	0.46	Acceptable
	West of Masters Dr.	4	20,000	16,200	0.81	Approaching Capacity
	West of Bedford Cyn.	4	20,000	21,300	1.07	Potentially Exceeds Capacity
	East of Bedford Cyn.	6	50,000	39,600	0.79	Acceptable
	East of I-15 SB Ramps	4	20,000	34,400	1.72	Exceeds Capacity
	East of I-15 NB Ramps	6	50,000	20,000	0.40	Acceptable
	East of Grand Oaks	6	50,000	17,500	0.35	Acceptable
	East of Temescal Cyn. Rd.	6	50,000	18,100	0.36	Acceptable
Steet "A"	South of Eagle Glen Pkwy.	4	20,000	21,900	1.10	Potentially Exceeds Capacity
	North of Street "B"	4	20,000	15,300	0.77	Acceptable
	South of Street "B"	2	10,000	2,200	0.22	Acceptable
Street "B"	West of Street "C"	2	10,000	700	0.07	Acceptable
	East of Street "C"	2	10,000	4,900	0.49	Acceptable
	East of Street "A"	2	10,000	7,200	0.72	Acceptable
Street "C"	South of Eagle Glen Pkwy.	2	10,000	7,300	0.73	Acceptable
	South of St. "B"	2	10,000	700	0.07	Acceptable

Table 5-23

Year 2035 Without Project Conditions
Roadway Link Capacity Analysis

Roadway	Segment	General Plan Roadway Section	General Plan Roadway Capacity	2035 Without Project Traffic	Volume/ Capacity Ratio	Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Dr.	2	10,000	8,000	0.80	Acceptable
	South of California Dr.	2	10,000	12,100	1.21	Potentially Exceeds Capacity
	North of Bennett Av.	2	10,000	7,600	0.76	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	8,600	0.86	Approaching Capacity
Bennett Av.	North of Masters Dr.	2	10,000	1,800	0.18	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,400	0.14	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	14,500	1.45	Potentially Exceeds Capacity
	North of Georgetown Dr.	2	10,000	14,500	1.45	Potentially Exceeds Capacity
	North of Eagle Glen Pkwy.	4	20,000	14,200	0.71	Acceptable
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	26,500	1.33	Potentially Exceeds Capacity
	South of Cajalco Rd.	4	20,000	21,000	1.05	Potentially Exceeds Capacity
California Dr.	West of Masters Dr.	2	10,000	8,300	0.83	Approaching Capacity
	East of Masters Dr.	2	10,000	10,800	1.08	Potentially Exceeds Capacity
El Cerrito Rd.	West of Bedford Cyn.	4	20,000	28,400	1.42	Potentially Exceeds Capacity
	East of Bedford Cyn.	4	20,000	35,100	1.76	Exceeds Capacity
	East of I-15 NB Ramps	4	20,000	17,200	0.86	Approaching Capacity
Georgetown Dr.	West of Bedford Cyn.	2	10,000	2,800	0.28	Acceptable
Eagle Glen Pkwy./	East of Bennett Av.	4	20,000	9,400	0.47	Acceptable
Cajalco Rd.	West of Masters Dr.	4	20,000	9,400	0.47	Acceptable
	West of Bedford Cyn.	4	20,000	17,300	0.87	Approaching Capacity
	East of Bedford Cyn.	6	50,000	17,800	0.36	Acceptable
	East of I-15 SB Ramps	6	50,000	20,400	0.41	Acceptable
	East of I-15 NB Ramps	6	50,000	25,200	0.50	Acceptable
	East of Grand Oaks	6	50,000	19,000	0.38	Acceptable
	East of Temescal Cyn. Rd.	6	50,000	30,000	0.60	Acceptable

- 13 roadway segments provide “Acceptable” capacity to satisfy daily vehicle traffic demand.
- 4 roadway segments begin to “Approach Capacity” where speed and freedom to maneuver are severely restricted at certain times of the day.
- 8 roadway segments “Potentially Exceed Capacity” or “Exceed Capacity” creating potential vehicle delays particularly during the peak hours.

5.5.6 2035 With Project Conditions, Roadway Link Analysis

The Roadway Link Analysis results for 2019 with project conditions are summarized in Table 5-24. Table 5-24 indicates that out of the total 33 with project study area roadway segments (including the on-site project roads):

- 15 roadway segments provide “Acceptable” capacity to satisfy daily vehicle traffic demand.
- 5 roadway segments begin to “Approach Capacity” where speed and freedom to maneuver are severely restricted at certain times of the day.
- 13 roadway segments “Potentially Exceed Capacity” or “Exceed Capacity” creating potential vehicle delays particularly during the peak hours.

Table 5-25 provides a summary of the Roadway Link Capacity Analysis for each of the project conditions. A review of Table 5-25 indicates that the following roadway links “Potentially Exceed Capacity” or “Exceed Capacity” based upon daily capacity estimates:

- Master Drive South of California Drive
- Masters Drive North of Bennett Avenue
- Masters Drive North of Eagle Glen Parkway
- Bedford Canyon South of El Cerrito Road
- Bedford Canyon North of Georgetown Drive
- Temescal Canyon Road North of Cajalco Road
- Temescal Canyon Road South of Cajalco Road
- California Drive East of Masters Drive

Table 5-24

Year 2035 With Project Conditions
Roadway Link Capacity Analysis

Roadway	Segment	General Plan Roadway Section	General Plan Roadway Capacity	2035 With Project Traffic	Volume/ Capacity Ratio	Average Daily Vehicle Capacity Threshold
Masters Dr.	North of California Dr.	2	10,000	8,500	0.85	Approaching Capacity
	South of California Dr.	2	10,000	15,000	1.50	Potentially Exceeds Capacity
	North of Bennett Av.	2	10,000	11,000	1.10	Potentially Exceeds Capacity
	North of Eagle Glen Pkwy.	2	10,000	12,000	1.20	Potentially Exceeds Capacity
Bennett Av.	North of Masters Dr.	2	10,000	1,800	0.18	Acceptable
	North of Eagle Glen Pkwy.	2	10,000	1,400	0.14	Acceptable
Bedford Cyn.	South of El Cerrito Rd.	2	10,000	17,000	1.70	Exceeds Capacity
	North of Georgetown Dr.	2	10,000	17,000	1.70	Exceeds Capacity
	North of Eagle Glen Pkwy.	4	20,000	17,000	0.85	Approaching Capacity
Temescal Canyon Rd.	North of Cajalco Rd.	4	20,000	27,000	1.35	Potentially Exceeds Capacity
	South of Cajalco Rd.	4	20,000	22,000	1.10	Potentially Exceeds Capacity
California Dr.	West of Masters Dr.	2	10,000	9,500	0.95	Approaching Capacity
	East of Masters Dr.	2	10,000	12,000	1.20	Potentially Exceeds Capacity
El Cerrito Rd.	West of Bedford Cyn.	4	20,000	30,000	1.50	Potentially Exceeds Capacity
	East of Bedford Cyn.	4	20,000	36,000	1.80	Exceeds Capacity
	East of I-15 NB Ramps	4	20,000	18,100	0.91	Approaching Capacity
Georgetown Dr.	West of Bedford Cyn.	2	10,000	3,100	0.31	Acceptable
Eagle Glen Pkwy./	East of Bennett Av.	4	20,000	9,700	0.49	Acceptable
Cajalco Rd.	West of Masters Dr.	4	20,000	25,000	1.25	Potentially Exceeds Capacity
	West of Bedford Cyn.	4	20,000	25,500	1.28	Potentially Exceeds Capacity
	East of Bedford Cyn.	6	50,000	40,600	0.81	Approaching Capacity
	East of I-15 SB Ramps	6	50,000	35,600	0.71	Acceptable
	East of I-15 NB Ramps	6	50,000	29,000	0.58	Acceptable
	East of Grand Oaks	6	50,000	22,500	0.45	Acceptable
	East of Temescal Cyn. Rd.	6	50,000	32,000	0.64	Acceptable
Steet "A"	South of Eagle Glen Pkwy.	4	20,000	21,900	1.10	Potentially Exceeds Capacity
	North of Street "B"	4	20,000	15,300	0.77	Acceptable
	South of Street "B"	2	10,000	2,200	0.22	Acceptable
Street "B"	West of Street "C"	2	10,000	700	0.07	Acceptable
	East of Street "C"	2	10,000	4,900	0.49	Acceptable
	East of Street "A"	2	10,000	7,200	0.72	Acceptable
Street "C"	South of Eagle Glen Pkwy.	2	10,000	7,300	0.73	Acceptable
	South of St. "B"	2	10,000	700	0.07	Acceptable

Table 5-25

Roadway Link Capacity Analysis (V/C Ratios Summary)

Roadway	Segment	2014		2019		2035	
		Without Project	With Project	Without Project	With Project	Without Project	With Project
Masters Dr.	North of California Dr.	0.05	0.54	0.56	0.61	0.80	0.85
	South of California Dr.	0.85	1.01	0.92	1.21	1.21	1.50
	North of Bennett Av.	0.58	0.76	0.62	0.96	0.76	1.10
	North of Eagle Glen Pkwy.	0.63	0.81	0.68	1.02	0.86	1.20
Bennett Av.	North of Masters Dr.	0.15	0.15	0.15	0.15	0.18	0.18
	North of Eagle Glen Pkwy.	0.10	0.10	0.11	0.11	0.14	0.14
Bedford Cyn.	South of El Cerrito Rd.	0.71	0.79	0.84	1.09	1.45	1.70
	North of Georgetown Dr.	0.70	0.78	0.83	1.08	1.45	1.70
	North of Eagle Glen Pkwy.	0.36	0.40	0.42	0.56	0.71	0.85
Temescal Canyon Rd.	North of Cajalco Rd.	0.63	0.64	0.75	0.77	1.33	1.35
	South of Cajalco Rd.	0.72	0.74	0.78	0.83	1.05	1.10
California Dr.	West of Masters Dr.	0.47	0.51	0.54	0.66	0.83	0.95
	East of Masters Dr.	0.87	0.95	0.92	1.04	1.08	1.20
El Cerrito Rd.	West of Bedford Cyn.	1.04	1.06	1.12	1.20	1.42	1.50
	East of Bedford Cyn.	1.09	1.11	1.22	1.27	1.76	1.80
	East of I-15 NB Ramps	0.49	0.51	0.56	0.61	0.86	0.91
Georgetown Dr.	West of Bedford Cyn.	0.23	0.25	0.24	0.27	0.28	0.31
Eagle Glen Pkwy./ Cajalco Rd.	East of Bennett Av.	0.44	0.45	0.45	0.46	0.47	0.49
	West of Masters Dr.	0.44	0.72	0.45	0.81	0.47	1.25
	West of Bedford Cyn.	0.60	0.84	0.66	1.07	0.87	1.28
	East of Bedford Cyn.	0.33	0.51	0.34	0.79	0.36	0.81
	East of I-15 SB Ramps	1.89	2.42	0.96	1.72	0.41	0.71
	East of I-15 NB Ramps	0.28	0.32	0.32	0.40	0.50	0.58
	East of Grand Oaks	0.25	0.28	0.28	0.35	0.38	0.45
	East of Temescal Cyn. Rd.	0.26	0.28	0.32	0.36	0.60	0.64
Steet "A"	South of Eagle Glen Pkwy.	-	0.32	-	1.10	-	1.10
	North of Street "B"	-	-	-	0.77	-	0.77
	South of Street "B"	-	-	-	0.22	-	0.22
Street "B"	West of Street "C"	-	-	-	0.07	-	0.07
	East of Street "C"	-	0.46	-	0.49	-	0.49
	East of Street "A"	-	-	-	0.72	-	0.72
Street "C"	South of Eagle Glen Pkwy.	-	0.53	-	0.73	-	0.73
	South of St. "B"	-	0.07	-	0.07	-	0.07

- El Cerrito Road West of Bedford Canyon
- El Cerrito Road East of Bedford Canyon
- Eagle Glen Parkway/Cajalco Road West of Masters Drive
- Eagle Glen Parkway/Cajalco Road East of I-15 SB Ramps (Interim Conditions)
- Eagle Glen Parkway/Cajalco Road West of Bedford Canyon
- Street "A" South of Eagle Glen Parkway

A review of the Table 5-25 indicates that the average daily traffic volumes on Eagle Glen Parkway west of Bedford Canyon Road will potentially exceed the capacity in 2019 with project conditons and the 2035 with project condtions. The segment analysis provided in the study identifies a capacity of 20,000 daily vehicles for a secondary roadway. This approach is consistent with the City of Corona Street Design Table Guidelines and reflects a LOS C capacity of 20,000. This is generally lower than the County of Riverside roadway level of service criteria, which provide a LOS D capacity of 23,300 vehicles and an estimated LOS E capacity of 25,900.

In additon, it is important to note that the roadway segment capacities are suitable for planning purposes, but they are not precise measures of capacity. The ultimate capacity of a roadway is based upon a number of factors. These factors include the relationships between peak hour and daily traffic volumes, the roadway design features (access spacing, intersection geometries, etc.), and the proportions and amount of traffic turning at key intersections (along with the amount of traffic crossing the roadway, or turning onto or off of the roadway at intersecting roadways). These factors were taken into consideration in the peak hour analysis provided in the Traffic Study.

The peak hour analysis shows that with the recommended intersection lane improvements, that the adjacent intersections will operate at acceptable levels of sevice during the peak hour conditions. The Syncrho/SimTraffic analysis performed by Urban Crossroads, Inc. and the City of Corona supports a four-lane secondary roadway on Eagle Glen Parkway west of Bedford Canyon Road consistent with the City of Corona General Plan Circulation Element classifications.

5.6 Project Fair Share Calculations

A discussion of the methodologies behind the project fair share calculations was previously presented in Section 4.8 of this report. At the direction of the City Traffic Engineer, the project fair share calculations have been evaluated for 2035 with project conditions

Tables 5-26 presents the project fair share calculations for 2035 conditions, respectively. "*The City of Corona Traffic Study Guidelines states that "if a project causes a facility that is projected to operate at an acceptable LOS with opening year background traffic, to operate at an unacceptable LOS, then mitigation measures shall be identified for which the project shall be responsible to bring the facility back to an acceptable LOS."* As such, the developer for Arantine Hills should be fully responsible for all the improvements that are only impacted under "with project" traffic conditions. Arantine Hills is responsible for the improvements at the following intersections listed below:

Masters Drive (NS) at:

- Bennett Drive (EW) [2]
- Eagle Glen Parkway (EW) [3]

Bedford Canyon Road (NS) at:

- Eagle Glen Parkway (EW) [6]

I-15 Southbound Ramps (NS) at:

- Eagle Glen Parkway (EW) [8]

I-15 Northbound Ramps (NS) at:

- Cajalco Road (EW) [10]

Street C (NS) at:

- Eagle Glen Parkway (EW) [13] – future intersection
- Street B (EW) [14] – future intersection

Street A (NS) at:

- Project Driveway (EW) [15] – future intersection
- Street B (EW) [16] – future intersection

Table 5-26

2035 Project Fair Share Calculations

No.	Intersection Name	Peak Hour	LOS Standard[1]	Delay (Vehicles/Second)				Project Fair Share[6]	Project Responsibliity
				Acceptable Delay[2]	Without Project[3]	With Project[4]	Project Only[5]		
1	Masters Dr. (NS) at:	AM	C	35	37.7	69.0	31.3	92.1%	92.1%
	• California Dr. (EW)	PM	C	35	13.9	20.7	6.8	-47.6%	
2	Masters Dr. (NS) at:	AM	C	35	8.7	10.4	1.7	-6.9%	100.0%
	• Bennett Av. (EW)	PM	C	35	17.0	55.2	38.2	189.1%	
3	Masters Dr. (NS) at:	AM	D	55	15.3	37.1	21.8	-121.8%	100.0%
	• Eagle Glen Pkwy. (EW)	PM	D	55	32.7	174.7	142.0	118.6%	
7	I-15 SB Ramps (NS) at:	AM	D	55	59.1	60.8	1.7	29.3%	29.3%
	• El Cerrito Rd. (EW)	PM	D	55	72.7	76.4	3.7	17.3%	
8	I-15 SB Ramps (NS) at:	AM	E	80	33.1	100.1	67.0	333.3%	100.0%
	• Cajalco Rd. (EW)	PM	E	80	52.5	286.0	233.5	113.3%	
10	I-15 NB Ramps (NS) at:	AM	E	80	37.4	111.6	74.2	234.8%	100.0%
	• Cajalco Rd. (EW)	PM	E	80	78.3	140.2	61.9	102.8%	
12	Temescal Cyn. Rd. (NS) at:	AM	D	55	107.7	104.2	(3.5)	-7.1%	7.0%
	• Cajalco Rd. (EW)	PM	D	55	142.6	149.2	6.6	7.0%	

1 Study area intersection Level of Service threshold as shown on Table 4-1.

2 Acceptable signalized intersection vehicle delay based on the LOS standards shown in Section 4.4.

3 Without project intersection delay as shown on Table 5-5 and Appendix 5.6.

4 With project intersection average delay as shown on Table 5-6 and Appendix 5.7.

5 Project only average intersection delay increase (With Project - Without Project)

6 Project Fair Share Calculation based on the City of Corona Traffic Study Guidelines]Project Only/(With Project-Acceptable Delay)]

The percentage of fair share for the project shall be calculated as the ratio of the increase in delay from project trips divided by the difference between total delay (including project) and delay at acceptable Level of Service.

6.0 FINDINGS AND CONCLUSIONS

This study assesses the traffic circulation of the proposed Arantine Hills Specific Plan project. The conclusions and recommendations are summarized below.

6.1 Project Trip Generation

The proposed Arantine Hills Specific Plan project is anticipated to be developed in two phases. Phase 1 (2014) of the project is anticipated to generate approximately 11,721 external trips per day with 971 AM peak hour external trips and 1,128 PM peak hour external trips. Phase Buildout (2019) of the project is anticipated to generate approximately 29,517 external trips per day with 1,644 AM peak hour external trips and 2,841 PM peak hour external trips. Internal capture reduction is applied to the project trips to account for traffic interaction between different planning areas with various land uses within the overall Specific Plan project site.

6.2 Traffic Impacts and Intersection Level of Service

Exhibit 6-1 provides a summary of the intersection geometrics for each of the study area intersection for existing 2009 conditions, 2014 conditions, 2019 conditions and 2035 conditions. For existing 2009 traffic conditions, the following study area intersection currently operates at unacceptable levels of service during the peak hours, with existing geometry:

Masters Drive (NS) at:

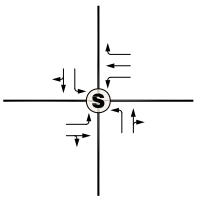
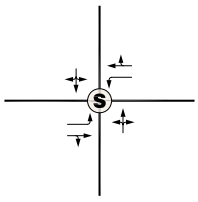
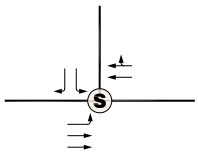
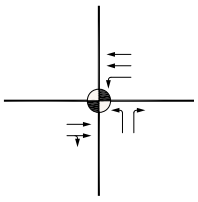
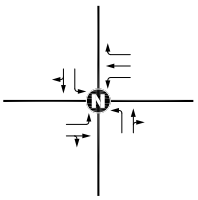
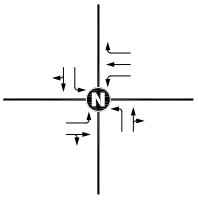
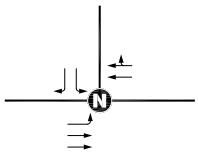
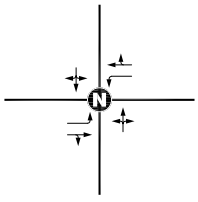
- California Avenue (EW) [1] – LOS F

For 2014 without project conditions, the following study area intersection is anticipated to operate at unacceptable levels of service during the peak hours, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F

INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO

1 MASTERS DRIVE/ CALIFORNIA DRIVE	2 MASTERS DRIVE/ BENNETT AVENUE	3 MASTERS DRIVE/ EAGLE GLEN PARKWAY	4 BEDFORD CANYON ROAD/ EL CERITO ROAD	
				2009
	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2014 WITHOUT PROJECT
NO CHANGE	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2019 WITHOUT PROJECT
NO CHANGE	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2035 WITHOUT PROJECT
	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2014 WITH PROJECT
NO CHANGE	**NO CHANGE**		**NO CHANGE**	2019 WITH PROJECT
NO CHANGE		**NO CHANGE**	**NO CHANGE**	2035 WITH PROJECT

LEGEND:

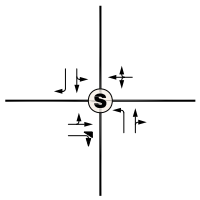
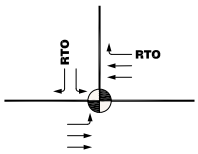
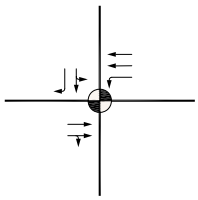
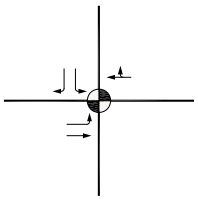
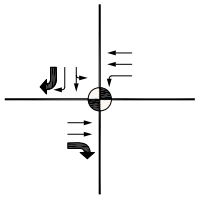
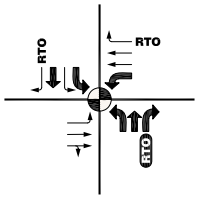
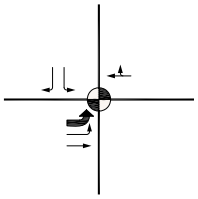
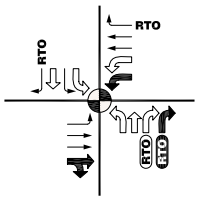
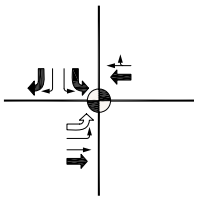
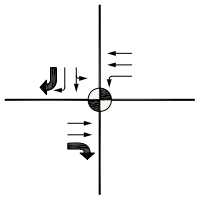
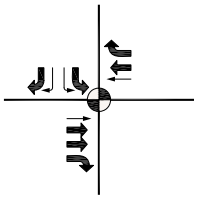
- = EXISTING TRAFFIC SIGNAL
- = NEW TRAFFIC SIGNAL
- = EXISTING ALL WAY STOP
- = NEW ALL WAY STOP

- RTO = EXISTING RIGHT TURN OVERLAP
- RTO = CURRENT PHASE RIGHT TURN OVERLAP PHASING IMPROVEMENT
- RTO = PREVIOUS PHASE RIGHT TURN OVERLAP PHASING IMPROVEMENT

- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENT
- = CURRENT PHASE FREE-RIGHT TURN LANE IMPROVEMENT

- = EXISTING FREE-RIGHT TURN LANE
- = PREVIOUS PHASE IMPROVEMENT
- = PREVIOUS PHASE FREE-RIGHT TURN LANE IMPROVEMENT

INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO

5 BEDFORD CANYON ROAD/ GEORGETOWN DRIVE	6 BEDFORD CANYON ROAD/ EAGLE GLEN PARKWAY	7 I-15 SB RAMPS/ EL CERRITO ROAD	8 I-15 SB RAMPS/ CAJALCO ROAD	
				2009
NO CHANGE	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2014 WITHOUT PROJECT
NO CHANGE	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2019 WITHOUT PROJECT
NO CHANGE	**NO CHANGE**		**NO CHANGE**	2035 WITHOUT PROJECT
NO CHANGE		**NO CHANGE**		2014 WITH PROJECT
NO CHANGE		**NO CHANGE**		2019 WITH PROJECT
NO CHANGE	**NO CHANGE**			2035 WITH PROJECT

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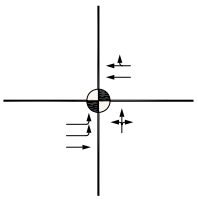
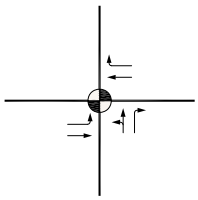
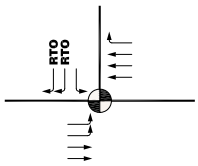
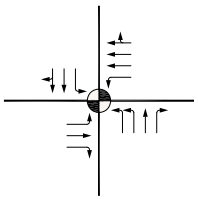
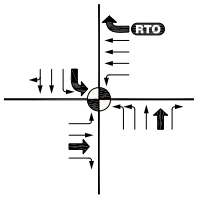
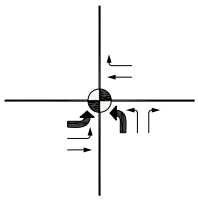
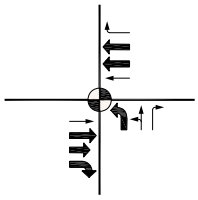
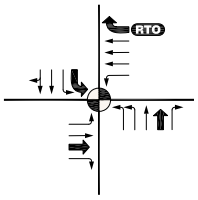
- = PREVIOUS PHASE IMPROVEMENT
- = PREVIOUS PHASE FREE-RIGHT TURN LANE IMPROVEMENT

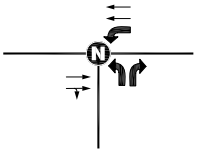
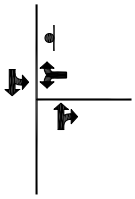
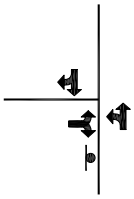
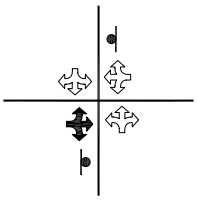
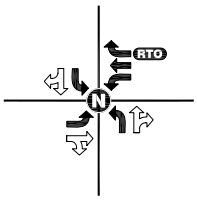
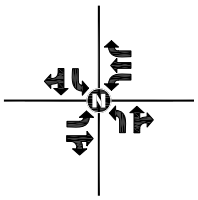
INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO

9 I-15 NB RAMPS/ EL CERRITO ROAD	10 I-15 NB RAMPS/ CAJALCO ROAD	11 GRAND OAKS/ CAJALCO ROAD	12 TEMESCAL CANYON ROAD/ CAJALCO ROAD	
				2009
NO CHANGE	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2014 WITHOUT PROJECT
NO CHANGE	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2019 WITHOUT PROJECT
NO CHANGE	**NO CHANGE**	**NO CHANGE**		2035 WITHOUT PROJECT
NO CHANGE	**NO CHANGE**	**NO CHANGE**	**NO CHANGE**	2014 WITH PROJECT
NO CHANGE		**NO CHANGE**	**NO CHANGE**	2019 WITH PROJECT
NO CHANGE		**NO CHANGE**		2035 WITH PROJECT

LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = NEW TRAFFIC SIGNAL
- = EXISTING ALL WAY STOP
- = NEW ALL WAY STOP
- RTO = EXISTING RIGHT TURN OVERLAP
- RTO = CURRENT PHASE RIGHT TURN OVERLAP PHASING IMPROVEMENT
- RTO = PREVIOUS PHASE RIGHT TURN OVERLAP PHASING IMPROVEMENT
- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENT
- = CURRENT PHASE FREE-RIGHT TURN LANE IMPROVEMENT
- = EXISTING FREE-RIGHT TURN LANE
- = PREVIOUS PHASE IMPROVEMENT
- = PREVIOUS PHASE FREE-RIGHT TURN LANE IMPROVEMENT

INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL, BY SCENARIO

13 STREET "C"/ EAGLE GLEN PARKWAY	14 STREET "C"/ STREET "B"	15 STREET "A"/ DRIVEWAY 1	16 STREET "A"/ STREET "B"	
FUTURE	FUTURE	FUTURE	FUTURE	2009
FUTURE	FUTURE	FUTURE	FUTURE	2014 WITHOUT PROJECT
FUTURE	FUTURE	FUTURE	FUTURE	2019 WITHOUT PROJECT
FUTURE	FUTURE	FUTURE	FUTURE	2035 WITHOUT PROJECT
			FUTURE	2014 WITH PROJECT
NO CHANGE				2019 WITH PROJECT
NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	2035 WITH PROJECT

LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = NEW TRAFFIC SIGNAL
- = EXISTING ALL WAY STOP
- = NEW ALL WAY STOP

- RTO = EXISTING RIGHT TURN OVERLAP
- RTO = CURRENT PHASE RIGHT TURN OVERLAP PHASING IMPROVEMENT
- RTO = PREVIOUS PHASE RIGHT TURN OVERLAP PHASING IMPROVEMENT

- = EXISTING LANE
- = CURRENT PHASE IMPROVEMENT
- = CURRENT PHASE FREE-RIGHT TURN LANE IMPROVEMENT

- = EXISTING FREE-RIGHT TURN LANE
- = PREVIOUS PHASE IMPROVEMENT
- = PREVIOUS PHASE FREE-RIGHT TURN LANE IMPROVEMENT

For 2014 with project (Phase 1) conditions, the three (3) existing intersections listed below are anticipated to operate at unacceptable levels of service during the peak hours, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F

Bedford Canyon Road (NS) at:

- Eagle Glen Parkway (EW) [6] – LOS F

I-15 Southbound Ramps (NS) at:

- Cajalco Road (EW) [8] – LOS F

For 2019 without project conditions, the following study area intersection is anticipated to operate at unacceptable levels of service during the peak hours, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F

For 2019 with project (buildout) conditions, the following five (5) existing intersections listed below are anticipated to operate at unacceptable levels of service during the peak hours, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F
- Eagle Glen Parkway (EW) [3] – LOS F

Bedford Canyon Road (NS) at:

- Eagle Glen Parkway (EW) [6] – LOS F

I-15 Southbound Ramps (NS) at:

- Cajalco Road (EW) [8] – LOS F

I-15 Northbound Ramps (NS) at:

- Cajalco Road (EW) [10] – LOS F

For 2035 without project conditions, the following three (3) existing study area intersections are anticipated to operate at unacceptable levels of service during the peak hours, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F

I-15 Southbound Ramps (NS) at:

- El Cerrito Road (EW) [7] – LOS F

Temescal Canyon Road (NS) at:

- Cajalco Road (EW) [12] – LOS F

For 2035 with project conditions, the eight (8) existing intersections listed below are anticipated to operate at unacceptable levels of service during the peak hours, with existing geometrics:

Masters Drive (NS) at:

- California Avenue (EW) [1] – LOS F
- Bennett Avenue (EW) [2] – LOS F
- Eagle Glen Parkway (EW) [3] – LOS F

Bedford Canyon Road (NS) at:

- Eagle Glen Parkway (EW) [6] – LOS F

I-15 Southbound Ramps (NS) at:

- El Cerrito Road (EW) [7] – LOS F
- Cajalco Road (EW) [8] – LOS F

I-15 Northbound Ramps (NS) at:

- Cajalco Road (EW) [10] – LOS F

Temescal Canyon Road (NS) at:

- Cajalco Road (EW) [12] – LOS F

However, with the recommended intersection improvements illustrated on Exhibits 5-1 through 5-5, all of the study area intersections are projected to operate at acceptable levels of service. It should be noted that the following intersections include improvements to accommodate new project access:

Street C (NS) at:

- Eagle Glen Parkway (EW) [13]
- Street B (EW) [14]

Street A (NS) at:

- Driveway 1 (EW) [15]
- Street B (EW) [16]

The recommended study area intersection improvement measures for the future traffic conditions are listed in Table 6-1. Table 6-1 identifies improvements that would allow the study intersections to operate at acceptable levels of service with the project and with cumulative growth, in addition to improvements for new project access connections. To illustrate the 2035 with project intersection geometrics Appendix 6.1 provides a conceptual layout for each of the study area intersection locations.

The intersection analysis indicates I-15 Freeway Interchange at Cajalco Road will require reconstruction of the existing Caltrans bridge and reconfiguration of the existing freeway on ramps. The developer recognizes that improvements at the I-15 Freeway Cajalco Road interchange are essential to the success of the proposed Arantine Hills Project as well as local and regional traffic circulation.

The project fair share impact for the Cajalco/I-15 Interchange based on year 2035 roadway link volumes is 32.5%.

However, the current Caltrans Project Report design for the Cajalco/I-15 Interchange (Locally Preferred Alternative) does not include a new I-15 southbound slip on-ramp as recommended

Table 6-1
(1 of 4)

Intersection Improvement Summary

No.	Intersection Name	2014 Without Project	2014 With Project	2019 Without Project	2019 With Project	2035 Without Project	2035 With Project	Fair Share
1	Masters Dr. (NS) at: • California Dr. (EW)	• Traffic signal	• Same	• Same	• Same	• Same	• Same	92%
2	Masters Dr. (NS) at: • Bennett Av. (EW)						• Traffic signal	100%[1]
3	Masters Dr. (NS) at: • Eagle Glen Pkwy. (EW)				• Traffic signal		• Same	100%[1]
4	Bedford Cyn. Rd. (NS) at: • El Cerrito Rd. (EW)							
5	Bedford Cyn. Rd. (NS) at: • Georgetown Dr. (EW)							
6	Bedford Cyn. Rd. (NS) at: • Eagle Glen Pkwy. (EW)		• NB left turn lane • NB thru lane • NB right turn lane • NB right turn overlap phasing • 2nd SB left turn lane • SB thru lane • WB left turn lane		• Same • Same • Same • Same • Same • Same • Same • 2nd NB right turn lane • 3rd EB thru lane • 2nd WB left turn lane		• Same • Same • Same • Same • Same • Same • Same • Same • Same • Same	100%[1]
7	I-15 SB Ramps (NS) at: • El Cerrito Rd. (EW)					• 2nd SB right turn lane • EB right turn lane	• Same • Same	29%

Table 6-1
(2 of 4)

Intersection Improvement Summary

No.	Intersection Name	2014 Without Project	2014 With Project	2019 Without Project	2019 With Project	2035 Without Project	2035 With Project	Fair Share
8	I-15 SB Ramps (NS) at: • Cajalco Rd. (EW)		• 2nd EB left turn lane		• Same • 2nd SB left turn lane • 2nd SB right turn lane • 2nd EB thru lane • 2nd WB thru lane		• Same • Same • Same • Same • 3rd EB thru lane • EB right turn lane • WB right turn lane	100%
9	I-15 NB Ramps (NS) at: • El Cerrito Rd. (EW)							
10	I-15 NB Ramps (NS) at: • Cajalco Rd. (EW)				• 2nd NB left turn lane • 2nd EB left turn lane		• Same • 2nd EB thru lane • 3rd EB thru lane • EB right turn lane • 2nd WB thru lane • 3rd WB thru lane	100%
11	Grand Oaks (NS) at: • Cajalco Rd. (EW)							

Table 6-1
(3 of 4)

Intersection Improvement Summary

No.	Intersection Name	2014 Without Project	2014 With Project	2019 Without Project	2019 With Project	2035 Without Project	2035 With Project	Fair Share
12	Temescal Cyn. Rd. (NS) at: • Cajalco Rd. (EW)					• 2nd NB thru lane • 2nd SB left turn lane • 2nd EB thru lane • WB right turn lane • WB right turn overlap phasing	• Same • Same • Same • Same • Same	7%
13	St. C (NS) at: • Eagle Glen Pkwy. (EW)		• Traffic signal • NB left turn lane • NB right turn lane • WB left turn lane		• Same • Same • Same • Same		• Same • Same • Same • Same	100%[1]
14	St. C (NS) at: • St. B (EW)		• WB Stop sign • NB all-way lane • SB all-way lane • WB all-way lane		• Same • Same • Same • Same • EB Stop sign • EB all-way lane		• Same • Same • Same • Same • Same • Same	100%[2]
15	St. A (NS) at: • Dwy. 1 (EW)		• EB Stop sign • NB all-way lane • SB all-way lane • EB all-way lane		• Traffic signal • NB thru-right • SB thru-right • EB thru-right • NB left turn lane • SB left turn lane • EB left turn lane • WB left turn lane • WB thru lane • WB right turn lane • WB right turn overlap phasing		• Same • Same • Same • Same • Same • Same • Same • Same • Same • Same	100%[2]

Table 6-1
(4 of 4)

Intersection Improvement Summary

No.	Intersection Name	2014 Without Project	2014 With Project	2019 Without Project	2019 With Project	2035 Without Project	2035 With Project	2035 Fair Share
16	St. A (NS) at: • St. B (EW)				• Traffic signal • NB left turn lane • NB thru lane • SB left turn lane • SB thru lane • EB left turn lane • EB thru lane • WB left turn lane • WB thru lane • WB right turn lane		• Same • Same • Same • Same • Same • Same • Same • Same • Same • Same	100%[2]

[1] Per the City of Corona Traffic Impact Study Guidelines 7/2006, "where there is no reasonable expectation that future development will significantly impact the facility, the project will be responsible for 100% of the mitigation cost and "fair share" will not apply.

[2] On-site project improvement.

for 2035 conditions. Because this additional on-rampis needed to serve with project conditions, either (1) the project will be fully responsible for the slip ramp improvement, or (2) an amendment to the Caltrans Project Report will be necessary.

It is acknowledged that the Arantine Hills project will be required to pay TUMF, and a portion of this TUMF payment will be used for the Cajalco/I-15 Interchange up to the maximum eligible amount included in the latest nexus for the TUMF program at the time of development for the Arantine Hills project. It is also acknowledged that the Cajalco/I-15 Interchange is a significant regional improvement project and the full cost for this interchange could be funded from several other funding sources in addition to Arantine Hills traffic mitigation requirements.

6.3 Traffic Signal Warrant Analysis

The results of the traffic signal warrant analysis are summarized on Exhibit 6-2. For existing 2009 traffic conditions, the following two (2) existing unsignalized study area intersections are currently warranted for traffic signals:

Masters Drive (NS) at:

- California Avenue (EW) [1]
- Eagle Glen Parkway (EW) [3]

For 2014 without project conditions, no additional traffic signals are projected to be warranted at the study area intersections other than those already warranted under existing 2009 conditions.

For 2014 with project (Phase 1) conditions, a traffic signal is projected to be warranted at the following study area intersection other than those already warranted under existing 2009 conditions:

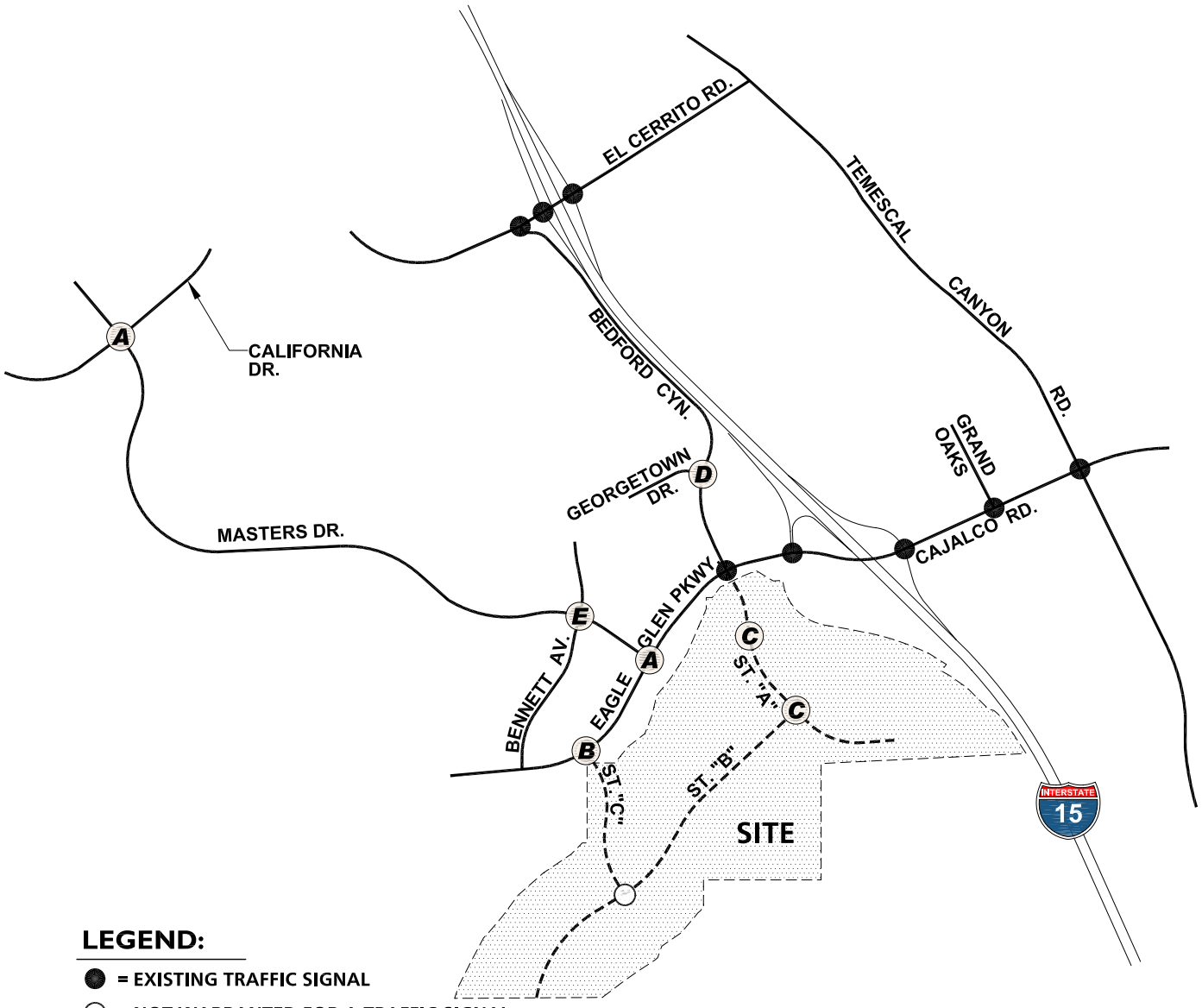
Street C (NS) at:

- Eagle Glen Parkway (EW) [13]

For 2019 without project conditions, no additional traffic signals are projected to be warranted at the study area intersections other than those already warranted under existing 2009 conditions.

EXHIBIT 6-2

TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY



LEGEND:

- = EXISTING TRAFFIC SIGNAL
- = NOT WARRANTED FOR A TRAFFIC SIGNAL

WARRANTED FOR:

- A = EXISTING 2009 CONDITIONS
- B = 2014 WITH PROJECT CONDITIONS
- C = 2019 WITH PROJECT CONDITIONS
- D = 2035 WITHOUT PROJECT CONDITIONS
- E = 2035 WITH PROJECT CONDITIONS

N

For 2019 with project (buildout) conditions, additional traffic signals are projected to be warranted at the following four (4) study area intersections other than those already warranted under existing 2009 and 2014 with project (Phase 1) conditions:

Street A (NS) at:

- Driveway 1 (EW) [15]
- Street B (EW) [16]

For 2035 without project conditions, an additional traffic signal is projected to be warranted at the following study area intersection other than those already warranted under existing 2009 conditions:

Bedford Canyon Road (NS) at:

- Georgetown Drive (EW) [5]

For 2035 with project conditions, an additional traffic signal is projected to be warranted at the following study area intersection other than those already warranted under existing 2009, 2014 with project (Phase 1), and 2019 with project (buildout) conditions:

Masters Drive (NS) at:

- Bennett Avenue (EW) [2]

It should be noted that the project intersection of Street C and Street B is not warranted for a traffic signal under existing or future traffic conditions.

6.4 Determination of Ramp Metered Lanes

The minimum number of ramp metered lanes at on-ramps within the study area has been determined based upon the thresholds outlined in the Caltrans Ramp Meter Design Manual. The results have been calculated based on the AM and PM peak hour ramp volumes with a threshold of 900 vehicles per hour for each lane. It should be noted that all the on-ramps currently do not have ramp metering except for the the I-15 Northbound On-Ramp at El Cerrito Road where the two-lane on-ramp has a one metered lane and one free-flow lane.

For 2014 without project conditions, the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lanes

For 2014 with project conditions, the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 2 lanes

For 2019 without project conditions with the reconfiguration of the I-15 interchange at Cajalco Road, the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 1 lane

For 2019 with project conditions with the reconfiguration of the I-15 interchange at Cajalco Road, the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane

- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 1 lane

For 2035 without project conditions with the reconfiguration of the I-15 interchange at Cajalco Road, the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 1 lane

For 2035 with project conditions with the reconfiguration of the I-15 interchange at Cajalco Road, the following number of ramp metered lanes are needed for each on-ramp location:

- I-15 Southbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Northbound On-Ramp at El Cerrito Road – 1 lane
- I-15 Southbound On-Ramp at Cajalco Road – 1 lane
- I-15 Southbound New Slip On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound New Loop On-Ramp at Cajalco Road – 1 lane
- I-15 Northbound On-Ramp at Cajalco Road – 1 lane

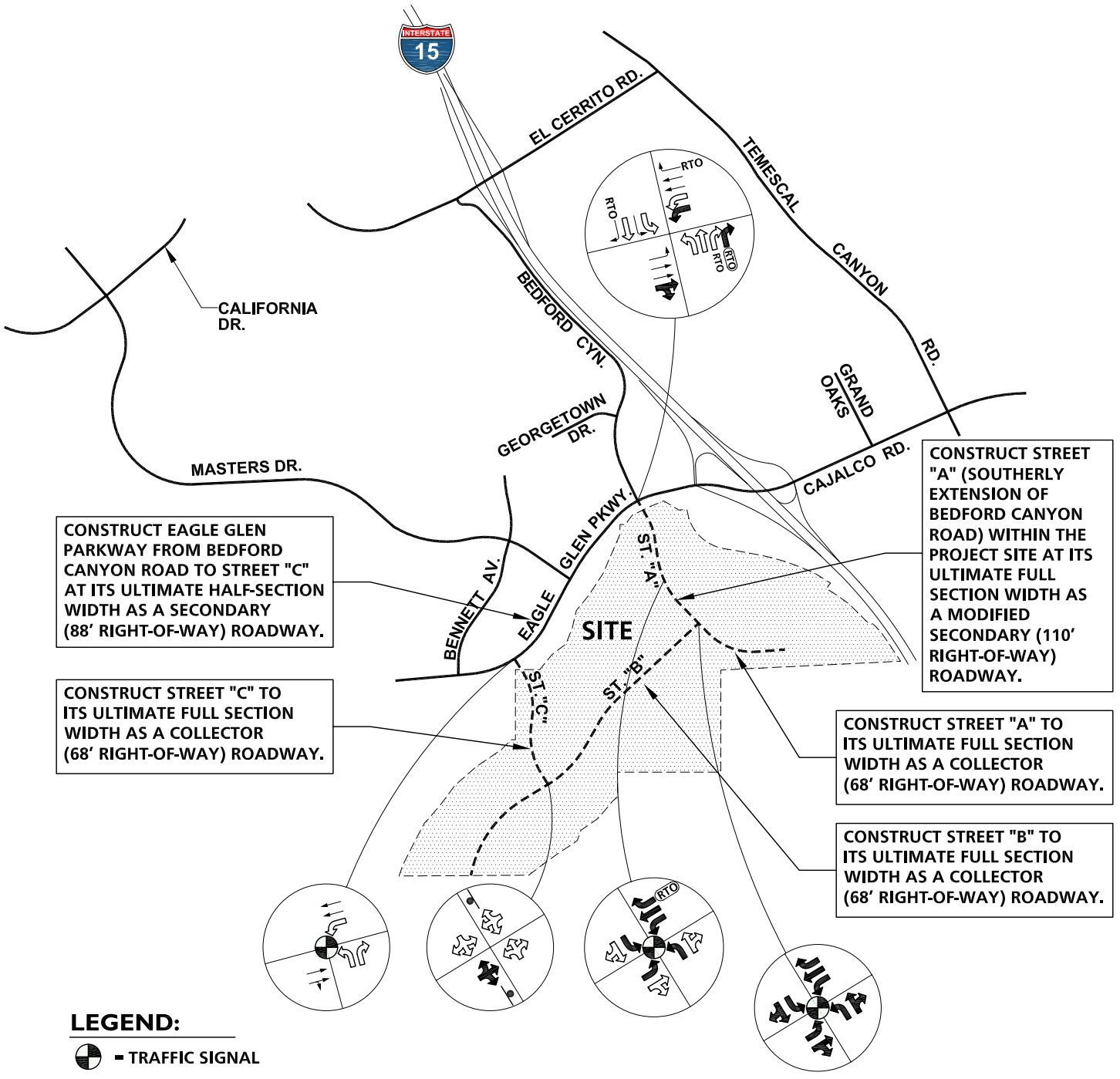
6.5 On-Site Circulation Recommendations

The recommended on-site roadway and intersection improvements are described below and illustrated on Exhibit 6-3.

- Construct Eagle Glen Parkway from Bedford Canyon Road to Street C at its ultimate half-section width as a Secondary (88-foot right-of-way) roadway.

EXHIBIT 6-3

ON-SITE CIRCULATION RECOMMENDATIONS



- Construct Street "A" (southerly extension of Bedford Canyon Road) from Eagle Glen Parkway south to Street "B" at its ultimate full-section width as a Modified Secondary (110-foot right-of-way) roadway.

- Construct Street "A" from Street "B" south at its ultimate full-section width as a Collector Street (68-foot right-of-way) roadway.

- Construct Street "B" at its ultimate full-section width as a Collector Street (68-foot right-of-way) roadway.

- Construct Street "C" at its ultimate full-section width as a Collector Street (68-foot right-of-way) roadway.

- Install traffic signals at the following intersections:
    - Street C at Eagle Glen Parkway
    - Street A at Project Driveway 1
    - Street A at Street B

- Install stop signs at the following locations:
    - Eastbound and westbound approaches on Street B at Street C

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the project site.

Sight distance at each project access driveway should be reviewed with respect to Caltrans and City of Corona sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

6.6 Project Fair Share Contribution

The project fair share contributions at the study area intersections summarized on Table 6-1.

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APPENDIX 1.1

City of Corona Comment Letters

M E M O R A N D U M

Public Works Department – Traffic Division

DATE: April 28, 2011

TO: **John Kain – Urban Crossroads**

SUBJECT: **Arantine Hills TIA Comments**

FROM: **Rafael Martinez, T.E. – City Traffic Engineer**

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1. Page 131-Table 5-22

The following 3 roadway segments have questionable traffic volumes. The 2019 With Project Traffic volumes (page 131) are lower than the 2014 With Project Traffic volumes (page 129)

- Eagle Glen Pkwy./West of Masters Dr
- Eagle Glen Pkwy./West of Bedford Cyn.
- Eagle Glen Pkwy./East of Bedford Cyn.

--This comment has been addressed

2. Page 104 fifth paragraph and page 148 second paragraph

Masters Drive at Bennett Avenue is projected to operate at unacceptable levels of service (LOS D) under the 2035 With Project conditions. This intersection should be included in the list of unacceptable intersections in the 2035 With Project Conditions.

--This comment has been addressed

3. Tables 5-26 to 5-28

Previous comment No. 17 has not been addressed. The current method used to calculate Project Fair Share based on project trips is unacceptable.

--All numbers has been revised. OK

4. Page 150 second paragraph

Previous comment No. 19 has not been addressed. The intersection analysis and roadway link analysis indicated that the Cajalco interchange must be widened or reconstructed to accommodate for future traffic. Although the Arantine Hills project has no control over the timing of the Caltrans interchange improvements, the developer should be responsible to pay a fair share cost towards the new interchange which is currently estimated to be $60M.

--This comment hasn't been address. The report will need to include the verbiage regarding Cajalco/I-15 interchange in Section 6.0 Findings and Conclusions. The report should also revise the verbiage in Page 152 of Section 6.2 regarding the Cajalco Interchange.

5. Page 160 to 162-section 6.5

Per section 4.7 (Page 81), the Report states that "roadway segment widening is recommended when…The roadway segment v/c ratio is approaching or potentially exceeds capacity (v/c>0.81); and, The adjacent intersections on either side of the segment operate at unacceptable levels of service during the peak hours without additional through lane intersection improvements."

As presented in Table 5-20, traffic volume on the segment of Eagle Glen Parkway between Masters Drive and Bedford Canyon Road will exceed capacity in the 2014 With Project Conditions (v/c 1.11). One way to mitigate this deficient is to widen this segment of the road from a 4-lane Secondary to a 6-lane Major Arterial. The need for widening is supported by Exhibit 6-1(Page 143), where the report showed that intersection 6 (Eagle Glen Parkway at Bedford Canyon Road) requires 3 EB through lanes and 4 EB through lanes in the 2019 With Project Conditions and the 2035 With Project Conditions, respectively.

--This comment hasn't been addressed. The report is still showing the segment of Eagle Glen Parkway between Bedford Canyon Road and Masters Drive will exceed capacity in 2019 With Project Conditions and the 2035 With Project Conditions (Page 141 of Table 5-25). Although on account of time and similarity with the city model Corona staff has performed the Synchro/SimTraffic analysis and verified that a four lane would satisfy delays and volume. Although additional intersection and lane modifications would need to be accommodated to improve intersection LOS, including; 1) An EB right turn pocket at "C" Street and Eagle Glen, 2) An additional EB fourth lane between Bedford Canyon and I-15SB dedicated to the free right turn slip ramp, 3) Geometric lane alignments at Bedford Canyon and Eagle Glen to prevent split phase movements for north and south.

6. Page 140 end of section 5.6

The report should also add intersections 2 and 13 to the list of intersections where the developer for Arantine Hills should be fully responsible for all the improvements. Intersection 2 is impacted only during the 2035 WITH PROJECT scenario. Intersection 13 is an onsite traffic signal that would not have been required if there were no Arantine Hills Project. Therefore, the developer should also pay for 100% of the fair share cost of the improvements on Intersections 2 and 13.

--This comment hasn't been addressed properly since the numbers in this report have been revised completely. Page 144 of Section 5.6 should list out those intersections where the developer for Arantine Hills should be fully responsible due to project trip contribution. These intersections are: 2, 3, 6, 8,10 and 13.

7. Page 142 Exhibit 6-1

Under Column 2 for the intersection of "Masters Drive/Bennett Avenue", the report should propose "NO CHANGE" for 2019 with Project Conditions. The proposed intersection geometry for 2019 with Project should be relocated down to the box for 2035 with Project.

--This comment has been addressed

8. Page 151-154 Table 6-1

Project Fair Share does not always equal to Percent Project Contribution. The table is showing percent project contribution which is misleading. See attached Table 6-1 for the complete list of comments regarding Project Fair Share and Project Mitigations.

--This comment has been addressed

9. Page 162 section 6.5

Based on the roadway link analysis, Eagle Glen Parkway between Masters Drive and Bedford Canyon Road should be constructed as a 6-lane Major (130-foot right-of-way) Arterial.

--This comment hasn't been addressed. Page 157 of Section 6.5, Based on the roadway link analysis, the developer is required to widen the segment of Eagle Glen Parkway along the project frontage to its ultimate half-section width as a Major (130-foot right-of-way) roadway. On account of time and similarity with the city model, Corona staff has performed the Synchro/SimTraffic analysis and verified that a four lane would satisfy delays and volume. Although additional intersection and lane modifications would need to be accommodated to improve intersection LOS including; 1) An EB right turn pocket at "C" Street and Eagle Glen, 2) An additional EB fourth lane between Bedford Canyon and I-15SB dedicated to the free right turn slip ramp, 3) Geometric lane alignments at Bedford Canyon and Eagle Glen to prevent split phase movements for north and south.

Addition Comments for March 31, 2011 Revised Report

Page 15 Table 2-1

LOS for Int. #1 Masters Dr./California Dr. AM Peak should be "F", not "C"

Page 70-77 Alternative Project

An alternative project with new car sales land use has been provided. The study showed an increase of 6,808 daily project trips as a result of the new land use. Since no detailed analysis has been provided for the new lane use, the Arantine Hills Specific Plan cannot adopt the Alternative Project as their proposed project until a new traffic impact analysis is submitted.

Page 97 Section 5.2.2 Second Paragraph

Missing Int. #6 Bedford/Eagle Glen

Page 105 Section 5.2.4 Second Paragraph

Missing Int. #6 Bedford/Eagle Glen

Page 107 Section 5.2.5 Second Paragraph, Page 108 Table 5-5, Page 110 Exhibit 5-4, Page 111 Second Paragraph, Pages 146-149 Exhibit 6-1, Pages 160-163 Table 6-1

The Cajalco/I-15 Ramps (Int. # 8 and #10) will operate at acceptable levels of service during the 2035 without project conditions, therefore no improvements are needed at this point. The report should remove all recommended improvements for Int. # 8 and #10 during the 2035 without project conditions.

Page 111 Section 5.2.6 Second Paragraph
Missing Int. #6 Bedford/Eagle Glen

Page 150 to 151
Missing Int. #6 Bedford/Eagle Glen for 2014 with Project, 2019 with Project, and 2035 with Project

MEMORANDUM

Public Works Department – Traffic Division

DATE: October 11, 2010

TO: **John Kain – Urban Crossroads**

SUBJECT: **Arantine Hills TIA Comments**

FROM: **Rafael Martinez, T.E. – City Traffic Engineer**

---

1. Page 131-Table 5-22

The following 3 roadway segments have questionable traffic volumes. The 2019 With Project Traffic volumes (page 131) are lower than the 2014 With Project Traffic volumes (page 129)

- Eagle Glen Pkwy./West of Masters Dr
- Eagle Glen Pkwy./West of Bedford Cyn.
- Eagle Glen Pkwy./East of Bedford Cyn.

2. Page 104 fifth paragraph and page 148 second paragraph

Masters Drive at Bennett Avenue is projected to operate at unacceptable levels of service (LOS D) under the 2035 With Project conditions. This intersection should be included in the list of unacceptable intersections in the 2035 With Project Conditions.

3. Tables 5-26 to 5-28

Previous comment No. 17 was not addressed. The current method used to calculate Project Fair Share based on project trips is unacceptable. **Project Fair Share calculations should be prepared per the Delay Method outlined in the City of Corona Traffic Study Guidelines. (2nd Request)**

4. Page 150 second paragraph

Previous comment No. 19 was not addressed. The intersection analysis and roadway link analysis indicated that the Cajalco interchange must be widened or reconstructed to accommodate for future traffic. Although the Arantine Hills project has no control over the timing of the Caltrans interchange improvements, the developer should be responsible to pay a fair share cost towards the new interchange which is currently estimated to be $60M. **Based on the Year 2035 roadway link volumes on the Cajalco bridge, the developer is required to pay 32.5% [% Fair Share Cost = 15,200 / (65,200-18,500)] of the fair share cost towards the new bridge widening/reconstruction, which equates to $19.5M.**

5. Page 160 to 162-section 6.5

Per section 4.7 (Page 81), the Report states that "roadway segment widening is recommended when...The roadway segment v/c ratio is approaching or potentially exceeds capacity (v/c>0.81);

and, the adjacent intersections on either side of the segment operate at unacceptable levels of service during the peak hours without additional through lane intersection improvements."

As presented in Table 5-20, traffic volume on the segment of Eagle Glen Parkway between Masters Drive and Bedford Canyon Road will exceed capacity in the 2014 With Project Conditions (v/c 1.11). One way to mitigate this deficiency is to widen this segment of the road from a 4-lane Secondary to a 6-lane Major Arterial. The need for widening is supported by Exhibit 6-1(Page 143), where the report showed that intersection 6 (Eagle Glen Parkway at Bedford Canyon Road) requires 3 EB through lanes and 4 EB through lanes in the 2019 With Project Conditions and the 2035 With Project Conditions, respectively. **As such, section 6.5 of the report should state that the developer for Arantine Hills will construct Eagle Glen Parkway from Bedford Canyon Road to Masters Drive at its ultimate half-section width as a 6-lane Major (130-foot right-of-way) Arterial.**

6. Page 140 end of section 5.6

The report should also add intersections 2 and 13 to the list of intersections where the developer for Arantine Hills should be fully responsible for all the improvements. Intersection 2 is impacted only during the 2035 WITH PROJECT scenario. Intersection 13 is an onsite traffic signal that would not have been required if there were no Arantine Hills Project. Therefore, the developer should also pay for 100% of the fair share cost of the improvements on Intersections 2 and 13.

7. Page 142 Exhibit 6-1

Under Column 2 for the intersection of "Masters Drive/Bennett Avenue", the report should propose "NO CHANGE" for 2019 with Project Conditions. The proposed intersection geometry for 2019 with Project should be relocated down to the box for 2035 with Project.

8. Page 151-154 Table 6-1

Project Fair Share does not always equal to Percent Project Contribution. The table is showing percent project contribution which is misleading. **Per the City of Corona Guideline, the developer needs to pay for 100% of the fair share cost for those intersections that are impacted by the Arantine Hills Project. These intersections are: #2 Masters Dr/Bennett Av, #3 Masters Dr/Eagle Glen Pkwy, #5 Bedford Cyn Rd/Georgetown Dr, #6 Bedford Cyn Rd/Eagle Glen Pkwy, and #13 St. C/Eagle Glen Pkwy.** See attached Table 6-1 for the complete list of comments regarding Project Fair Share and Project Mitigations.

9. Page 162 section 6.5

Based on the roadway link analysis, Eagle Glen Parkway between Masters Drive and Bedford Canyon Road should be constructed as a 6-lane Major (130-foot right-of-way) Arterial. **The developer is required to widen this segment of the road along the project frontage to its ultimate half-section width as a Major (130-foot right-of-way) roadway.**

URBAN CROSSROADS
41 Corporate Park, Suite 300 Irvine, CA 92606 949.660.1994 main 949.660.1911 fax www.urbanxroads.com

October 7, 2010

Mr. Rafael Martinez, T.E.
CITY OF CORONA
400 S. Vicentia Avenue
P.O. Box 940
Corona, CA 92878-0940

Subject: Arantine Hills Traffic Impact Analysis (TIA) Response to Comments provided by the City of Corona Public Works Department on July 14, 2010

Dear Mr. Martinez:

The firm of Urban Crossroads, Inc. is pleased to submit the following responses to the comments provided by the City of Corona regarding the Arantine Hills Traffic Impact Analysis, dated May 10, 2010. The City of Corona Public Works Department comment memorandum is provided in Attachment A of this letter.

Comment 1

Page 131-Table 5-22: The following 3 roadway segments have questionable traffic volumes. The 2019 With Project Traffic volumes (page 131) are lower than the 2014 With Project Traffic volumes (page 129)

- *Eagle Glen Pkwy./West of Masters Dr*
- *Eagle Glen Pkwy./West of Bedford Cyn.*
- *Eagle Glen Pkwy./East of Bedford Cyn.*

Response to Comment 1

These numbers on Eagle Glen Parkway have been corrected for consistency with the ADT volumes shown on Exhibit 3-22.

Comment 2

Page 104 fifth paragraph and page 148 second paragraph: Masters Drive at Bennett Avenue is projected to operate at unacceptable levels of service (LOS D) under the 2035 With Project conditions. This intersection should be included in the list of unacceptable intersections in the 2035 With Project Conditions.

Response to Comment 2

This text has been revised.

Comment 3:
Tables 5-26 to 5-28: Previous comment No. 17 was not addressed. The current method used to calculate Project Fair Share based on project trips is unacceptable. ***Project Fair Share calculations should be prepared per the Delay Method outlined in the City of Corona Traffic Study Guidelines. (2nd Request)***

Response to Comment 3
The calculations have been revised to reflect the City of Corona Fair Share Calculation Methodology.

Comment 4:
Page 150 second paragraph: Previous comment No. 19 was not addressed. The intersection analysis and roadway link analysis indicated that the Cajalco interchange must be widened or reconstructed to accommodate for future traffic. Although the Arantine Hills project has no control over the timing of the Caltrans interchange improvements, the developer should be responsible to pay a fair share cost towards the new interchange which is currently estimated to be $60M. ***Based on the Year 2035 roadway link volumes on the Cajalco bridge, the developer is required to pay 32.5% [% Fair Share Cost = 15,200 / (65,200-18,500)] of the fair share cost towards the new bridge widening/reconstruction, which equates to $19.5M.***

Response to Comment 4

As stated in on page 150 second paragraph, the developer recognizes that improvements at the I-15 Freeway Cajalco Road interchange are essential to the success of the proposed Arantine Hills Project. The Arantine Hills Specific Plan project is required to participate in funding or construction of off-site improvements that are needed to serve cumulative traffic conditions through the payment of Western Riverside County Transportation Uniform Mitigation Fees (TUMF). This regional program was put into place to ensure that development pays its fair share and that funding is in place for construction of facilities needed to maintain the acceptable LOS and to ensure that regional highways and arterial expansions keep pace with projected growth. The I-15 Cajalco Road interchange is proposed for improvement under TUMF. To satisfy the off-site cumulative transportation impacts, the Arantine Hills Specific Plan will be required to pay TUMF fees as part of any project approval.

Comment 5:
Page 160 to 162-section 6.5: Per section 4.7 (Page 81), the Report states that "roadway segment widening is recommended when…The roadway segment v/c ratio is approaching or potentially exceeds capacity (v/c>0.81); and, the adjacent intersections on either side of the segment operate at unacceptable levels of service during the peak hours without additional through lane intersection improvements."

As presented in Table 5-20, traffic volume on the segment of Eagle Glen Parkway between Masters Drive and Bedford Canyon Road will exceed capacity in the 2014 With Project Conditions (v/c 1.11). One way to mitigate this deficiency is to widen this segment of the road from a 4-lane Secondary to a 6-lane Major Arterial. The need for widening is supported by Exhibit 6-1(Page 143), where the report showed that intersection 6 (Eagle Glen Parkway at Bedford Canyon Road) requires 3 EB through lanes and 4 EB through lanes in the 2019 With Project Conditions and the 2035 With Project Conditions, respectively. ***As such, section 6.5 of the report should state that the developer for Arantine Hills***

will construct Eagle Glen Parkway from Bedford Canyon Road to Masters Drive at its ultimate half-section width as a 6-lane Major (130-foot right-of-way) Arterial.

Response to Comment 4

Based on the analysis for 2019 with project conditions, the intersection of Bedford Canyon Road (NS) and Eagle Glen Parkway (EW) will require two westbound through lanes and three eastbound through lanes. The roadway segment analysis suggests that the City of Corona volume to capacity ratio (v/c) Eagle Glen Parkway from west of Masters Drive to Bedford Canyon Road will range from 1.09 to 1.30. The segment analysis provided in the study identifies a capacity of 20,000 daily vehicles for a secondary roadway. This approach is consistent with the City of Corona Street Design Table Guidelines and reflects a LOS C capacity of 20,000. This is generally lower than the County of Riverside roadway level of service criteria, which provide a LOS D capacity of 23,300 vehicles and an estimated LOS E capacity of 25,900.

However, it is important to note that the roadway segment capacities are suitable for planning purposes, but they are not precise measures of capacity. The ultimate capacity of a roadway is based upon a number of factors. These factors include the relationships between peak hour and daily traffic volumes, the roadway design features (access spacing, intersection geometries, etc.), and the proportions and amount of traffic turning at key intersections (along with the amount of traffic crossing the roadway, or turning onto or off of the roadway at intersecting roadways). These factors were taken into consideration in the peak hour analysis provided in the Traffic Study.

The analysis provided in the traffic study is based on the worst-case peak hour conditions using Synchro/SimTraffic to simulate actual vehicle delay and the operation of the traffic conditions. Based on the PM peak hour conditions for 2019 with project, we are recommending that the intersection of Bedford Canyon Road (NS) and Eagle Glen Parkway (EW) provide the following intersection geometrics.

Northbound
- One Left-Turn Lane
- One Thru Lane
- Two Right-Turn Lanes

Southbound
- Two Left-Turn Lanes
- One Thru Lane
- One Right-Turn Lane

Eastbound
- One Left-Turn Lane
- Three Thru Lanes
- One Right-Turn Lane

Westbound
- Two Left-Turn Lanes

- Two Thru Lanes
- One Right Turn Lane

These improvements provide the needed intersection capacity to maintain an acceptable peak hour LOS D conditions. Since this intersection is key to the overall traffic conditions in the area, the roadway segment LOS of both Eagle Glen Parkway and Bedford Canyon Road is largely a function of the operations and delay of this intersection. Because the roadway segment capacity of Eagle Glen Parkway is significantly constrained by the intersection of Bedford Canyon Road, it effectively limits the benefits of adding additional midblock capacity on Eagle Glen Parkway west of Bedford Canyon Road.

Based on a Syncrho/SimTraffic analysis, the three westbound through lanes will experience average queue lengths of approximately 280 feet with 95th percentile queue lengths approaching 400 feet. Providing additional westbound roadway segment capacity for 2019 and 2035 with project conditions will not significantly improve the overall operations at this key location.

Comment 6:

Page 140 end of section 5.6

The report should also add intersections 2 and 13 to the list of intersections where the developer for Arantine Hills should be fully responsible for all the improvements. Intersection 2 is impacted only during the 2035 WITH PROJECT scenario. Intersection 13 is an onsite traffic signal that would not have been required if there were no Arantine Hills Project. Therefore, the developer should also pay for 100% of the fair share cost of the improvements on Intersections 2 and 13.

Response to Comment 6

This text has been revised.

Comment 7:

Page 142 Exhibit 6-1: Under Column 2 for the intersection of "Masters Drive/Bennett Avenue", the report should propose "NO CHANGE" for 2019 with Project Conditions. The proposed intersection geometry for 2019 with Project should be relocated down to the box for 2035 with Project.

Response to Comment 7

Exhibit 6-1 correctly identifies the Traffic Signal at this location for 2019 with project conditions. Table 5-4 has been corrected to include the Traffic Signal.

Comment 8:

Page 151-154 Table 6-1: Project Fair Share does not always equal to Percent Project Contribution. The table is showing percent project contribution which is misleading. ***Per the City of Corona Guideline, the developer needs to pay for 100% of the fair share cost for those intersections that are impacted by the Arantine Hills Project. These intersections are: #2 Masters Dr/Bennett Av, #3 Masters Dr/Eagle Glen Pkwy, #5 Bedford Cyn Rd/Georgetown Dr, #6 Bedford Cyn Rd/Eagle Glen Pkwy, and #13 St. C/Eagle Glen Pkwy.*** *See attached Table 6-1 for the complete list of comments regarding Project Fair Share and Project Mitigations.*

Response to Comment 8

The project fair share calculations have been modified for consistency with the City of Corona Traffic Study Guidelines that state "where there is no reasonable expectation that future development will significantly impact the facility, the project will be responsible for 100% of the mitigation cost and "fair share" will not apply. Table 6-1 has been corrected.

Comment 9:

Page 162 section 6.5: Based on the roadway link analysis, Eagle Glen Parkway between Masters Drive and Bedford Canyon Road should be constructed as a 6-lane Major (130-foot right-of-way) Arterial. ***The developer is required to widen this segment of the road along the project frontage to its ultimate half-section width as a Major (130-foot right-of-way) roadway.***

Response to Comment 8

Eagle Glen Parkway between Masters Drive and Bedford Canyon Road is classified as a 4-lane Secondary roadway by the City of Corona General Plan Circulation Element. The proposed change in roadway classification modifies the existing right-of-way from an 88-foot wide cross-section to a 130-foot wide cross-section. This presents some significant impact to the proposed project since Eagle Glen Parkway is constrained to the north by existing residential development and topographical constraints on the project site to the south. In addition, as

noted in response to comment 4, the capacity of Eagle Glen Parkway between Masters Drive and Bedford Canyon Road is is significantly constrained by the intersection of Bedford Canyon Road. This intersection effectively limits the benefits of adding additional midblock capacity on Eagle Glen Parkway west of Bedford Canyon Road. The worst-case peak hour Syncrho/SimTraffic analysis does not support the need to provide addition midblock capacity on Eagle Glen Parkway between Masters Drive and Bedford Canyon Road.

If you have any questions regarding the information provided, please call me at (949) 660-1994, ext. 203.

Sincerely,

URBAN CROSSROADS, INC.

Bill Lawson, PE, AICP, PTP
Principal

JN: 06694-09 ResponseToCity_20100428.doc

Attachments

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.148
Loss Time (sec):	8	Average Delay (sec/veh):	46.6
Optimal Cycle:	120	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	142	331	396	254	195	24	25	211	131	194	125	215
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	142	331	396	254	195	24	25	211	131	194	125	215
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	142	331	396	254	195	24	25	211	131	194	125	215
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	149	348	417	267	205	25	26	222	138	204	132	226
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	149	348	417	267	205	25	26	222	138	204	132	226
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	149	348	417	267	205	25	26	222	138	204	132	226
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.57	0.92	0.92	0.18	0.98	0.98	0.64	0.94	0.94	0.36	1.00	0.85
Lanes:	1.00	0.46	0.54	1.00	0.89	0.11	1.00	0.62	0.38	1.00	1.00	1.00
Final Sat.:	1092	794	950	347	1665	205	1210	1105	686	680	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.14	0.44	0.44	0.77	0.12	0.12	0.02	0.20	0.20	0.30	0.07	0.14
Crit Moves:				****						****		
Green/Cycle:	0.67	0.67	0.67	0.67	0.67	0.67	0.26	0.26	0.26	0.26	0.26	0.26
Volume/Cap:	0.20	0.65	0.65	1.15	0.18	0.18	0.08	0.77	0.77	1.15	0.26	0.54
Delay/Veh:	7.6	12.9	12.9	124.5	7.5	7.5	33.5	48.4	48.4	157.3	35.4	39.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.6	12.9	12.9	124.5	7.5	7.5	33.5	48.4	48.4	157.3	35.4	39.4
LOS by Move:	A	B	B	F	A	A	C	D	D	F	D	D
HCM2kAvgQ:	2	17	17	17	3	3	1	14	14	14	4	8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.677
Loss Time (sec):	8	Average Delay (sec/veh):	23.7
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	155	131	229	58	167	21	24	118	241	351	138	44
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	155	131	229	58	167	21	24	118	241	351	138	44
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	155	131	229	58	167	21	24	118	241	351	138	44
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	163	138	241	61	176	22	25	124	254	369	145	46
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	163	138	241	61	176	22	25	124	254	369	145	46
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	163	138	241	61	176	22	25	124	254	369	145	46
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.53	0.91	0.91	0.29	0.98	0.98	0.66	0.90	0.90	0.47	1.00	0.85
Lanes:	1.00	0.36	0.64	1.00	0.89	0.11	1.00	0.33	0.67	1.00	1.00	1.00
Final Sat.:	1007	626	1094	559	1659	209	1250	561	1147	899	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.16	0.22	0.22	0.11	0.11	0.11	0.02	0.22	0.22	0.41	0.08	0.03
Crit Moves:		****								****		
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.61	0.61	0.61	0.61	0.61	0.61
Volume/Cap:	0.50	0.68	0.68	0.34	0.33	0.33	0.03	0.36	0.36	0.68	0.13	0.05
Delay/Veh:	33.7	38.3	38.3	31.7	30.8	30.8	9.4	12.1	12.1	19.1	10.1	9.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	33.7	38.3	38.3	31.7	30.8	30.8	9.4	12.1	12.1	19.1	10.1	9.5
LOS by Move:	C	D	D	C	C	C	A	B	B	B	B	A
HCM2kAvgQ:	5	13	13	2	5	5	0	7	7	10	2	1

Note: Queue reported is the number of cars per lane.

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APPENDIX 1.2

Caltrans April 1, 2010 Response To Comments Letter

URBAN CROSSROADS
41 Corporate Park, Suite 300 Irvine, CA 92606 949.660.1994 main 949.660.1911 fax www.urbanxroads.com

May 7, 2010

Mr. Daniel Kopulsky
DEPARTMENT OF TRANSPORTATION
DISTRICT 8 - PLANNING
464 West 4th Street, 6th Floor MS 725
San Bernardino, CA 92401-1400

Subject: Arantine Hills Traffic Impact Analysis (TIA) Response to Comments provided by the California Department of Transportation (CalTrans) on April 1, 2010 (RIV -15-PM 36.813)

Dear Mr. Kopulsky:

The firm of Urban Crossroads, Inc. is pleased to submit the following responses to the comment letter from Caltrans on the December 16, 2009 Arantine Hills traffic impact analysis report. The April 1, 2010 Caltrans Department comment letter is provided in Attachment A.

Comment 1
Provide ramp merge/diverge analysis for interchanges located at the I-15/Cajalco Road and I-15/El Cerrito Road.

Response to Comment 1
The ramp merge/diverge analysis is now included in Section 5.4 of the revised Arantine Hills Traffic Impact Analysis.

Comment 2
The standard LOS requirement for intersections within Caltrans right-of-way is D or better. For example, Section 4.2 Level of Service, page 70 – The "LOS E will be permitted for the intersection of Cajalco Road at I-15"

Response to Comment 2
Section 4.2 of the Traffic Impact Analysis provides the City of Corona Level of Service (LOS) criteria that is defined in the City General Plan Circulation Element and identified in the City of Corona Traffic Impact Study Guidelines. The Arantine Hills Traffic Impact Analysis provides the mitigation measures needed to satisfy the minimum level of service thresholds defined by the City of Corona. This is consistent with the Caltrans *Guide for the preparation of Traffic Impact Studies* that states "Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, the existing Measure of Effectiveness (MOE) should be maintained".

Comment 3
The threshold for the intersections at I-15/Cajalco Road northbound/southbound ramps must be LOS D not E as indicated in Table 4-1 Study Area Intersection Level of Service Threshold.

Response to Comment 3
See Response to Comment 2.

Comment 4
Provide a hard copy of all Traffic Impact Analysis and all Appendices and Synchro analysis output in the report.

Response to Comment 4
Urban Crossroads will provide a hard copy of the revised Arantine Hills Traffic Impact Analysis report and all appendices and Synchro analysis output.

Comment 5
Page 23, provide more detailed information about the Western Riverside Subarea Applications Model (WRSATM) and also justify not using the Riverside county Transportation Analysis Model (RivTAM).

Response to Comment 5
The Traffic Impact Analysis has been revised to include the following additional text discussing the use of the WRSATM.

Because the current Riverside County Transportation Model (RivTAM) does not currently represent buildout of the City and County General Plan, the Western Riverside Subarea Applications Traffic Model (WRSATM) was used. In addition, the RiveTAM 2035 forecasts in the project study area do not reflect adequate growth in volumes. The WRSATM is a modified version of the Riverside County Integrated Project (RCIP) model. The study area for RCIP includes all of Western Riverside County. The WRSATM is based on the RCIP model, but has been further refined to include additional detail both in the project study area and in the surrounding area where more current information is available, and to include more up to date land use and roadway specifications for approved projects and developments. General Plan Buildout forecasts have been developed from the WRSATM using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between existing conditions and General Plan buildout

The model run from which all others pivot is the "General Plan Buildout Without MCP". The population and employment forecasts are derived from the City of Riverside and City of Corona General Plan Buildout datasets used for modeling purposes in each jurisdiction. The WRSATM includes up to 9.5 percent more residents and 13 percent more employees than the raw RCIP model inputs in the Riverside/Corona traffic analysis study area, ensuring a "worse case" conservative analysis of long range future.

At the direction of City Staff, the WRSATM model was used to maintain consistency with the Eagle Valley Traffic Impact Analysis.

Comment 6

Provide an explanation and source of the interchange modification in year 2019 for the southbound on-ramp at the southwest quadrant and northbound loop on-ramp at the southeast quadrant.

Response to Comment 6

The Cajalco Road interchange layout at the I-15 Freeway is based on the April 2008 project report. The project report provides the geometric layout for the interchange including the northbound loop on-ramp at the southeast quadrant. In addition to the proposed layout described in the project report, a southbound on-ramp was added due to the expected high volume of 721 PM peak hour vehicles making a westbound left turn at the intersection of I-15 Southbound Ramps at Cajalco Road (8).

Comment 7

The intersection operational analysis summary tables should verify the level of service LOS calculations. See Synchro analysis comments below.

- *2014 AM No Project Improved; 2 input lanes on Node #8 WBT and EBT but only 1 receiving lane on link: Node #6 WB and #10 EB?*
- *2014 AM WP Improved; verify through and turning lane movement sin Synchro layout. (i.e. should not have 3 or 4 lanes on westbound and 2 lanes eastbound).*
- *2014 AM WP Improved; left turn lane should be a protected left-turn signal instead of permissive left-turn. Please verify the signal timing.*
- *2035 AM & PM No Project; verify the 8-lane road instead of 6-lane road between northbound ramp and Temescal Canyon Road.*

Response to Comment 7

The Synchro analysis has been modified.

If you have any questions regarding the information provided, please call me at (949) 660-1994, ext. 203.

Sincerely,

URBAN CROSSROADS, INC.

Bill Lawson, PE, PTP
Principal

TH:BL:th
JN: 06280-07-Response_061609

Attachments

ATTACHMENT A

Caltrans Comment Letter
Dated April 1, 2010

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
PLANNING
464 WEST 4th STREET, 6th Floor MS 725
SAN BERNARDINO, CA 92401-1400
PHONE (909) 383-4557
FAX (909) 383-5936
TTY (909) 383-6300

Received
APR - 6 2010
Community Development Dept.

Flex your power!
Be energy efficient!

April 1, 2010

Ms. Terri Manuel
City of Corona
Planning Department
400 S. Vicentia Avenue
Corona, CA 92882

Arantine Hills Specific Plan Traffic Impact Study dated December 16, 2009, RIV-15-PM 36.813

Dear Ms. Manuel,

We have completed our review of the Arantine Hills Specific Traffic Impact Study (TIA) dated December 16, 2009 and the associated Synchro Analysis. Based on review of the submitted materials our Traffic Operation Department and Forecasting Department have the following recommendations:

- Provide ramp merge/diverge analysis for interchanges located at I-15/Cajalco Road and I-15/El Cerrito Road.
- The standard LOS requirement for intersections within Caltrans right-of-way is D or better. For example, Section 4.2 Level of Service, page 70 – The "LOS E will be permitted for the intersections of Cajalco Road at I-15".
- The threshold for the intersections at I-15/Cajalco Road northbound/southbound ramps must be LOS D not E as indicated in Table 4-1 Study Area Intersection Level of Service Threshold.
- Provide a hard copy of all Traffic Impact Analysis and all Appendices and Synchro analysis output in the report.
- Page 23, provide more detailed information about the Western Riverside Subarea Applications Model (WRSATM) and also justify not using the Riverside County Transportation Analysis Model (RivTAM).
- Provide an explanation and source of the interchange modification in year 2019 for additional southbound on-ramp at the southwest quadrant and northbound loop on-ramp at the southeast quadrant.
- The intersection operational analysis summary tables should verify the level of service (LOS) calculations. See Synchro analysis comments below.

Synchro Analysis:

- 2014 AM No Project Improved; 2 input lanes on Node # 8 WBT and EBT but only 1 receiving lane on link: Node # 6 WB and # 10 EB?
- 2014 AM WP Improved; verify through and turning lane movements in Synchro layout. (i.e. should not have 3 or 4 lanes on westbound and 2 lanes eastbound)
- 2014 AM WP Improved; left turn lane should be a protected left-turn signal instead of permissive left-turn. Please verify the signal timing.
- 2035 AM & PM No Project; verify the 8-lane road instead of 6-lane road between northbound ramp and Temescal Canyon. Road.

Thank you for providing us this opportunity to review the Arantine Hills Specific Plan TIA and for your consideration of these and future comments. These recommendations are preliminary and summarize our review of materials provided for our evaluation. If this proposal is revised in any way, please forward appropriate information to this Office so that updated recommendations for impact mitigation may be provided. If you have questions concerning these comments, or would like to meet to discuss our concerns, please contact me at (909) 383-4557 for assistance

Sincerely,

DANIEL KOPULSKY
Office Chief
Community Planning, IGR/CEQA Review

c: Manuel Jabson, Traffic Operations
Gary Green, Forecasting

APPENDIX 1.3

Traffic Study Scoping Agreement

Traffic Impact Study Scope – City of Corona

Revised 9/4/2009 Based Upon City Staff Comments

Project Name:	ARANTINE HILLS SPECIFIC PLAN
Project Address:	South of Cajalco Road and West of I-15 Freeway
Project Description:	Approximately 1,621 dwelling units and 745,300 square feet of commercial retail/business park/office. *(See attached Exhibit 2 and Table 1)*
Case Number:	

	Consultant	Developer
Name:	URBAN CROSSROADS, INC. Attn: John Kain	BLUESTONE COMMUNITIES Attn: Bentley Kerr
Address:	41 Corporate Park, Suite 300 Irvine, CA 92606	17992 Mitchell South, Suite 100 Irvine, CA 92614
Telephone: E-mail:	(949) 660-1994 jkain@urbanxroads.com	(949) 475-4116 bkerr@bluestonecommunities.com

A. Trip Generation – *See attached Tables 3 through 7 for Phase 1 (2014), and Tables 8 through 12 for Phase 2 (2019 Cumulative)*

Proposed Land Use	*See Attached Tables*	Previous Land Use	Residential/Vacant
Existing Zoning	Agricultural	Proposed Zoning	Specific Plan

External *(Table 8)*	In	Out	Total
AM Peak Hour	763	881	1,644
PM Peak Hour	1,436	1,405	2,841

B. Trip Distribution

Attach graphical representation – See attached Exhibits 4 through 6 for distribution patterns. See attached Exhibits 7 and 9 for project trip assignments.

C. Background Traffic

Project Opening year:	2014 and 2019	**Growth Rate:**	2% per year

D. Study Intersections – *See attached Exhibit 1*

Masters Dr. (NS) / California Ave. (EW)	I-15 SB (NS) / El Cerrito Rd. (EW)
Masters Dr. (NS) / Bennett Dr. (EW)	I-15 SB (NS) / Cajalco Rd. (EW)
Masters Dr. (NS) / Eagle Glen Pkwy. (EW)	I-15 NB (NS) / El Cerrito Rd. (EW)
Bedford Cyn. Rd. (NS) / Foothill Pky. (EW)	I-15 NB (NS) / Cajalco Rd. (EW)
Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)	Temescal Cyn. Rd. (NS) / El Cerrito Rd.(EW)
Bedford Cyn. Rd. (NS) / Eagle Glen Pky. (EW)	Temescal Cyn. Rd. (NS) / Cajalco Rd. (EW)
Grand Oaks (NS) / Cajalco Rd. (EW)	

E. Specific Issues to be addressed in the Study

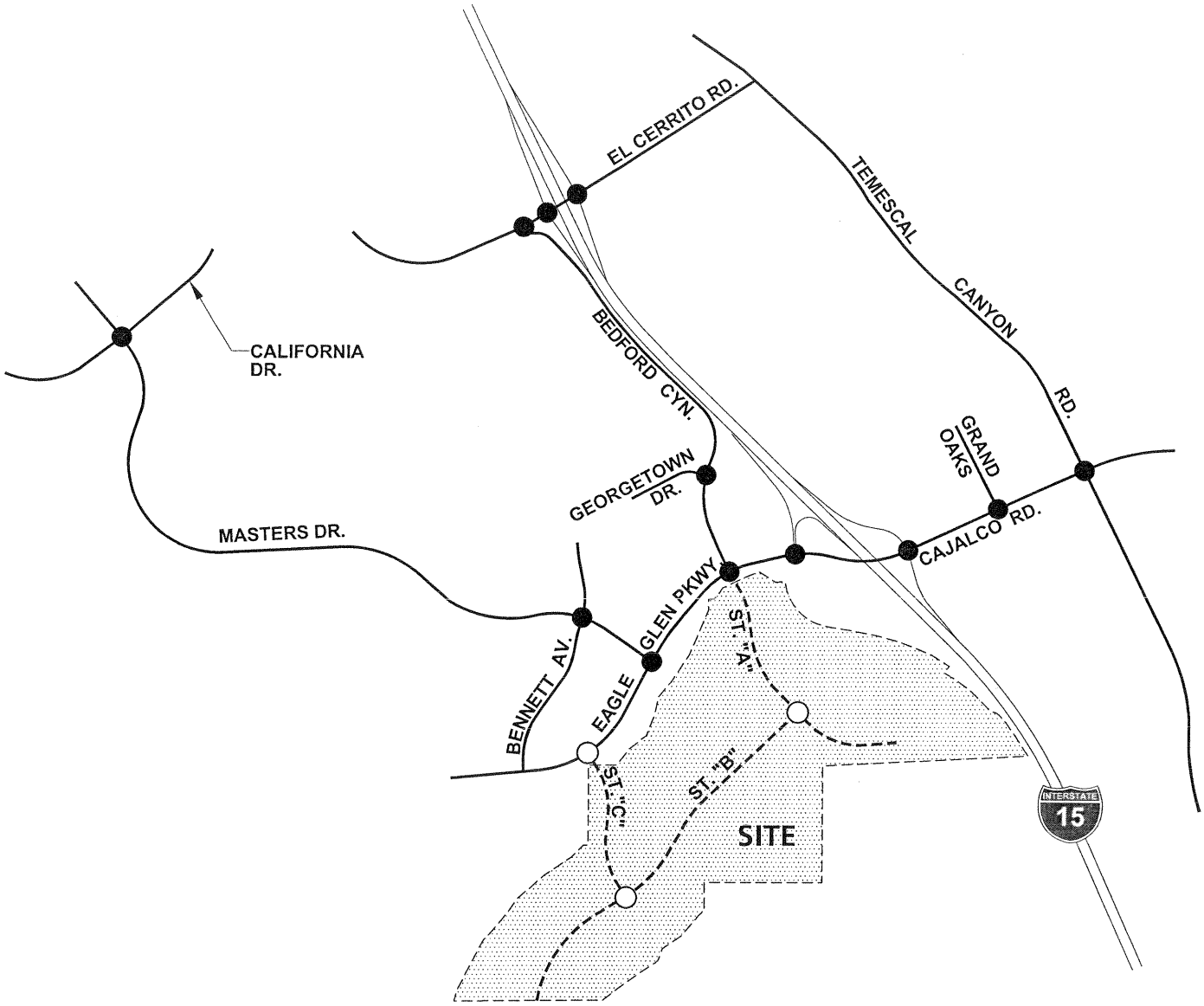
I-15 / Cajalco Interchange Configuration – *See Attached Exhibit 8*
Long-Range (2035) Projections Without MCP – *See attached Exhibit 10 and Table 13*
2014 and 2019 Projections – *See Attached Exhibit 11*

Approved By:

City of Corona Traffic Engineering:	
Date:	9/16/09

EXHIBIT 1

LOCATION MAP



LEGEND:

● = EXISTING INTERSECTION ANALYSIS LOCATION

○ = FUTURE INTERSECTION ANALYSIS LOCATION

N

EXHIBIT 2

LAND USE PLAN

Land Use	Acreage	Dwelling Units
General Commercial (GC)	38.3	-
Mixed Use I (MU-I, Comm./Res.)	19.9	451
Mixed Use II (MU-II, Indus./Comm.)	18.6	-
High Density Residential (HDR)	34.5	621
Medium Density Residential (MDR)	65.9	461
Low Density Residential (LDR)	29.2	88
Parks (P)	15.0	-
Open Space (OS)	36.9	-
Master Planned Roadways	16.5	-
TOTAL:	274.8	1621 *

* If Planning Area 16 is developed with age-qualified units at up to 25 du/ac, the total number of dwelling units would increase to 1,806

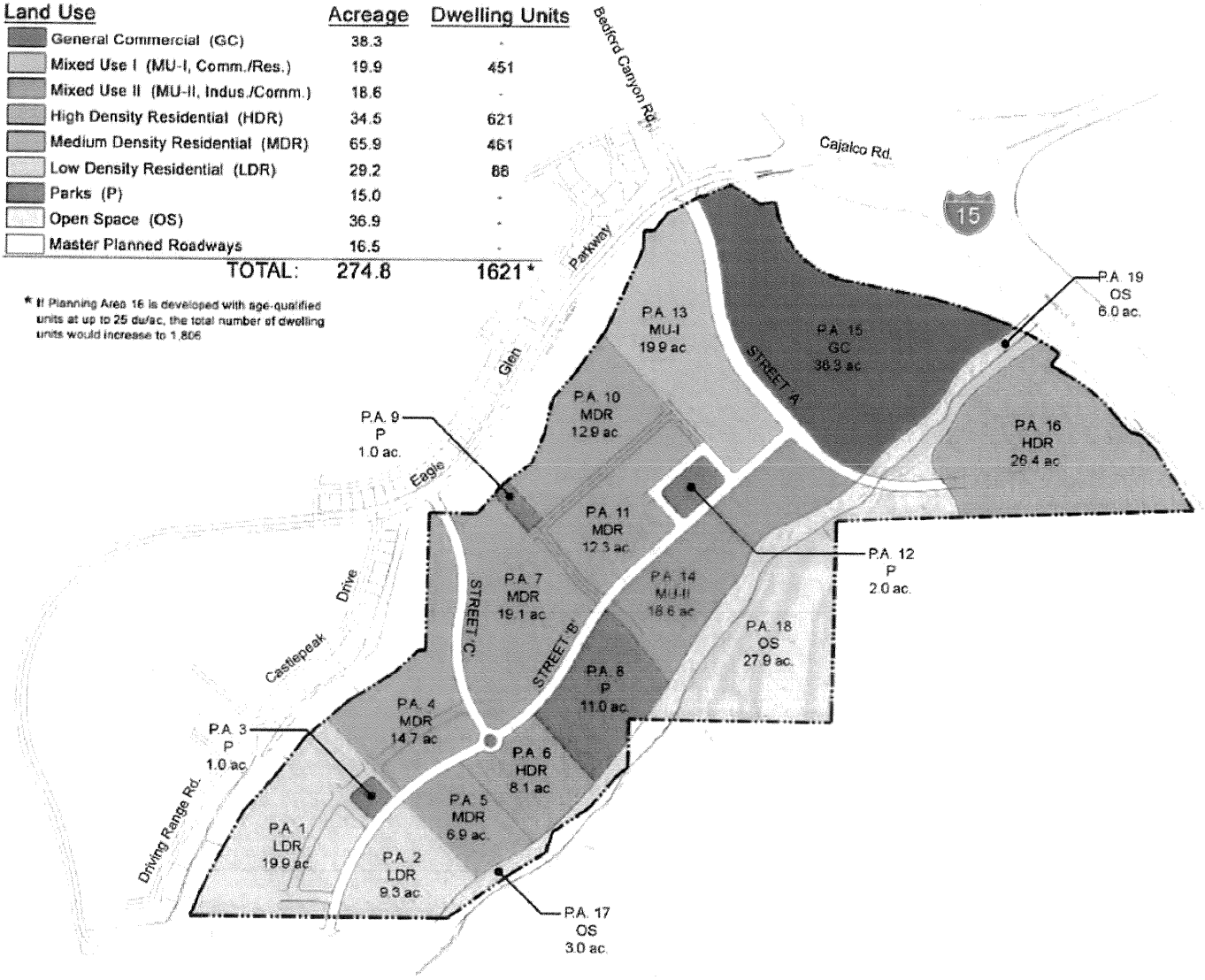


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EXHIBIT 3

LAND USE PHASING PLAN

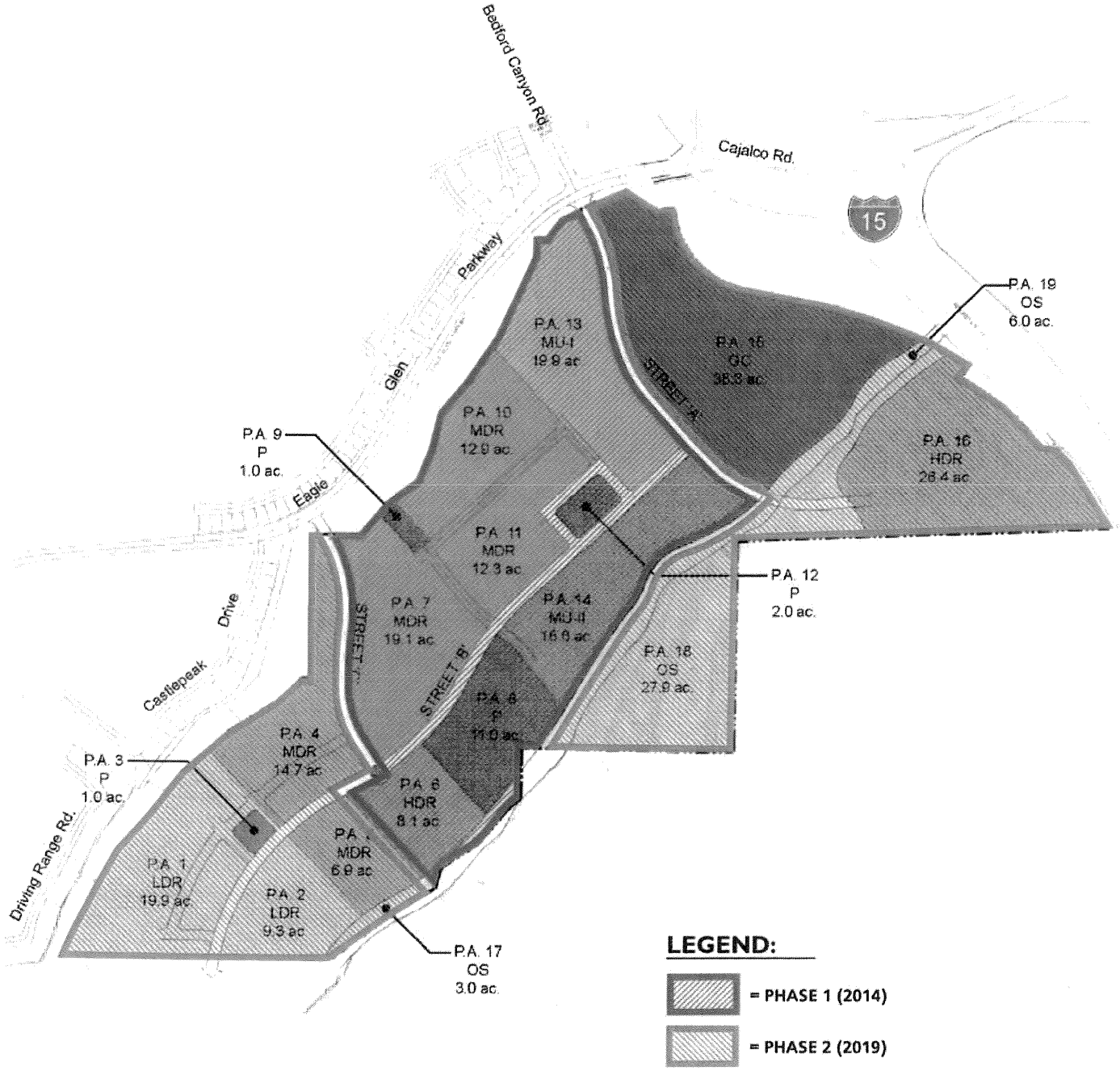
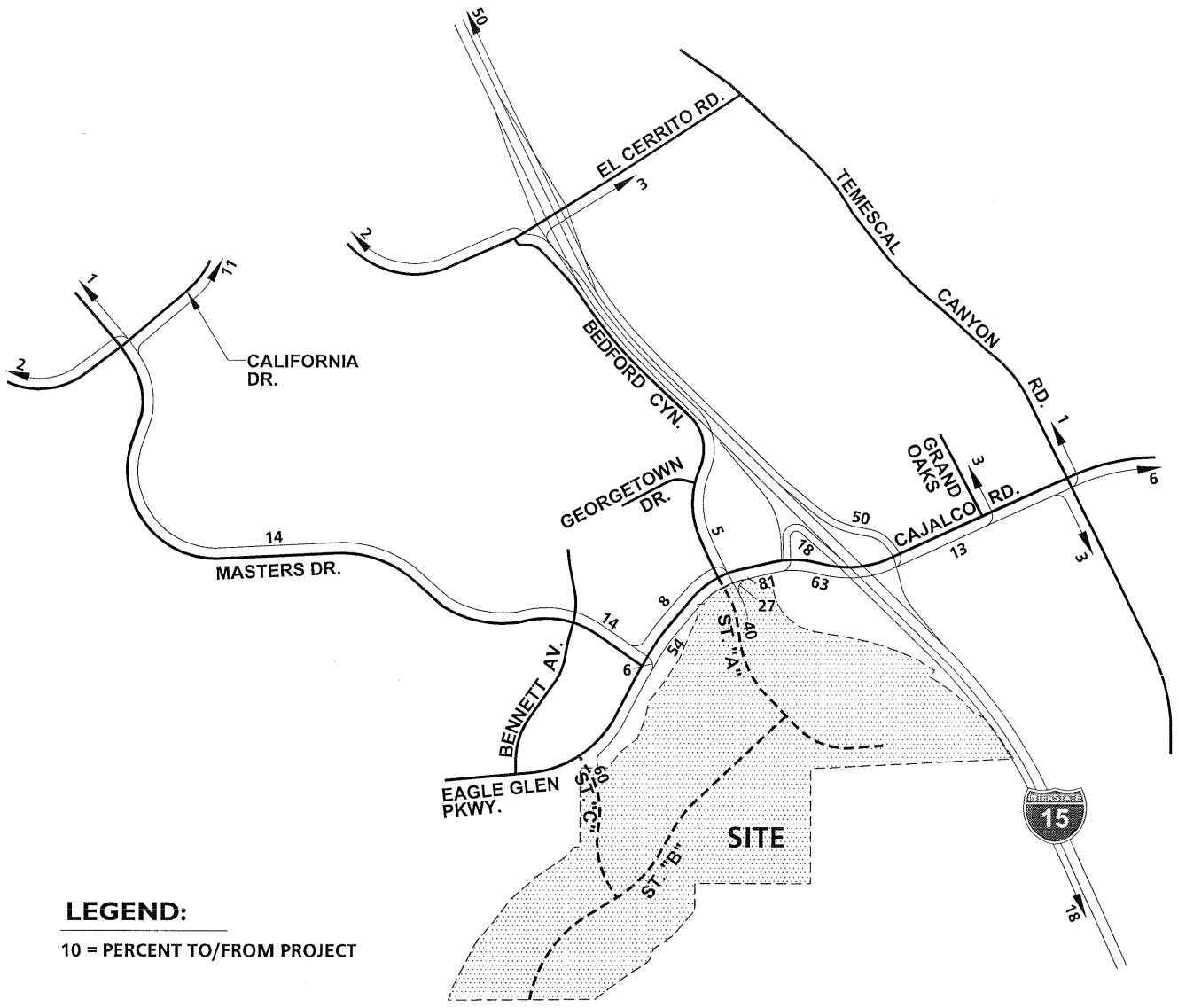
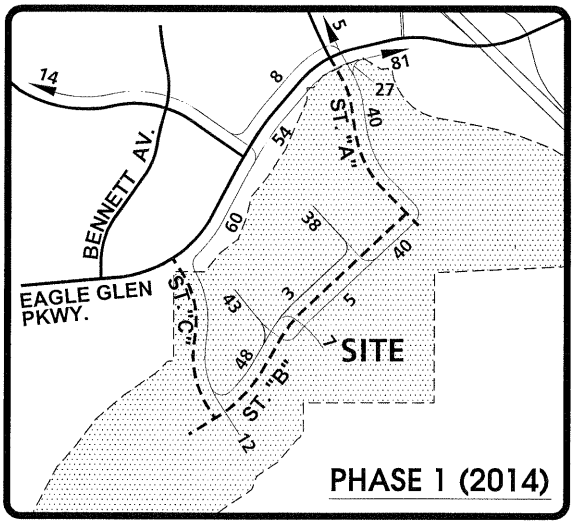


EXHIBIT 4

RESIDENTIAL / PARKS EXTERNAL TRIP DISTRIBUTION





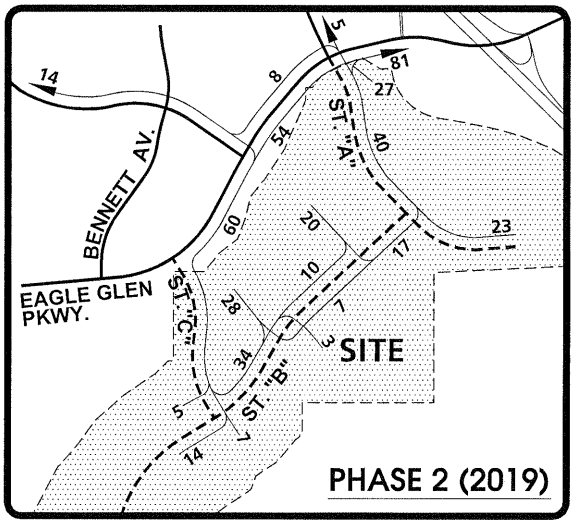
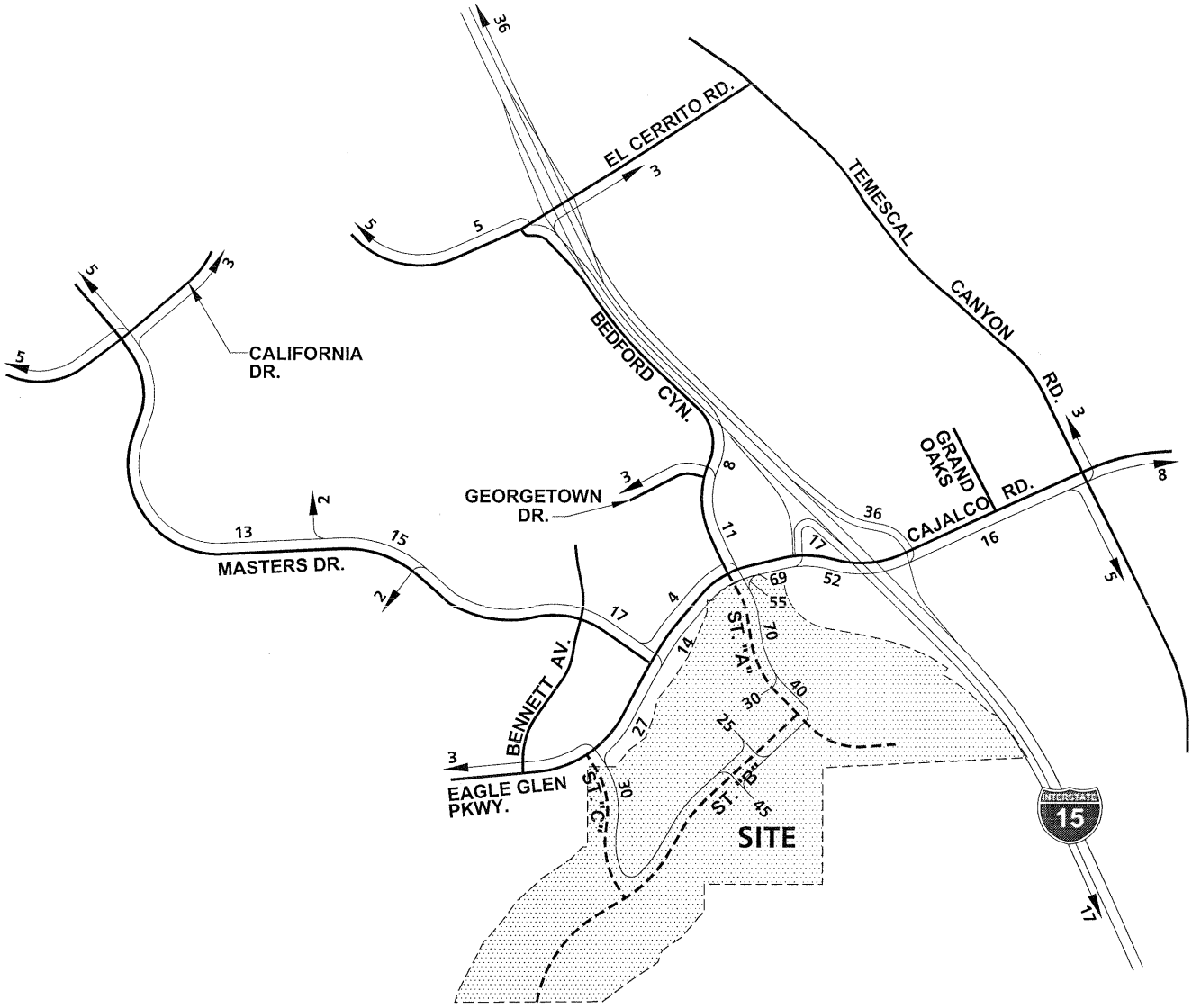


EXHIBIT 5

SPECIALTY RETAIL / OFFICE / BUSINESS PARK EXTERNAL TRIP DISTRIBUTION



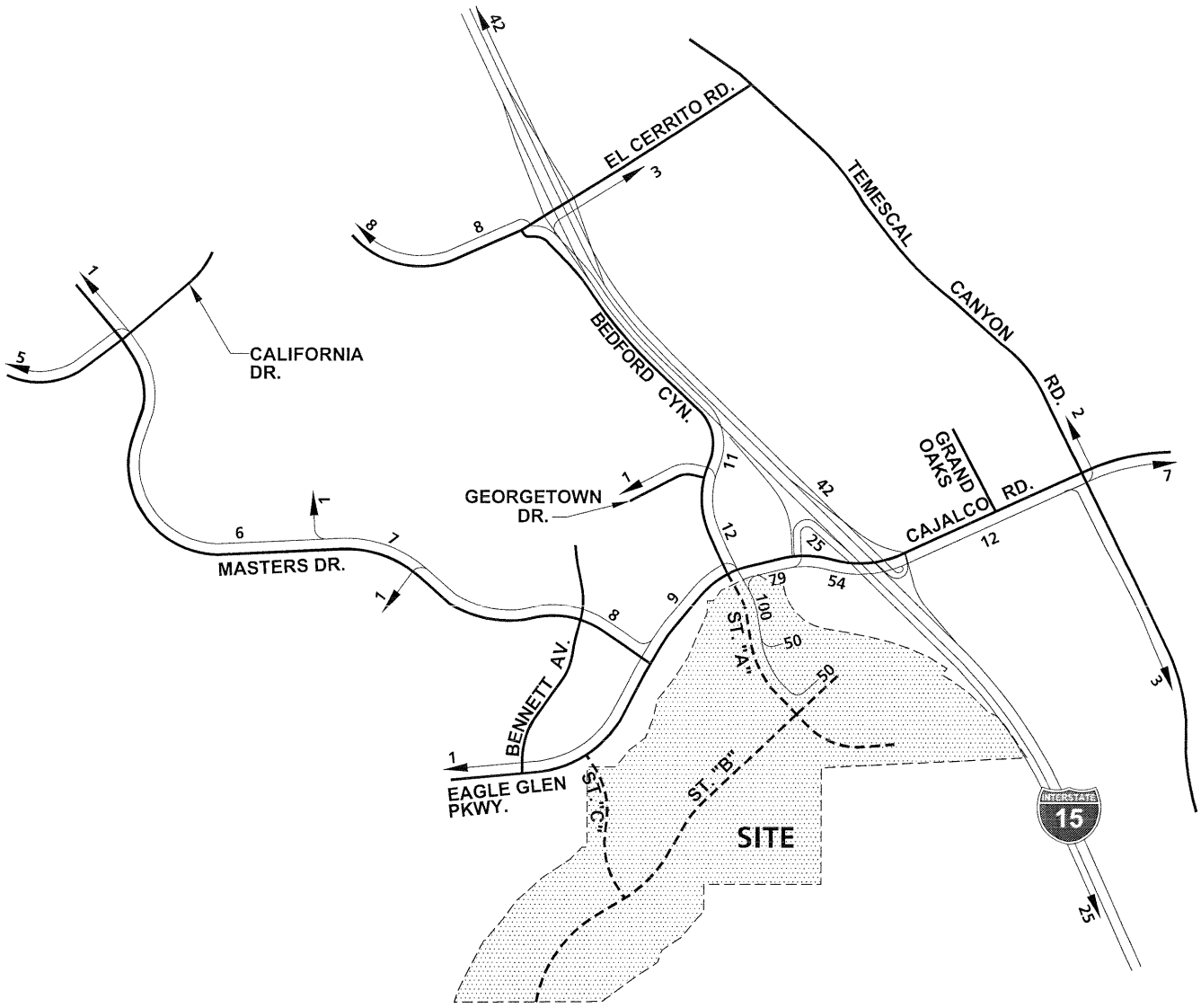
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT 6

SHOPPING CENTER
EXTERNAL TRIP DISTRIBUTION (PHASE 2 ONLY - 2019)



LEGEND:

10 = PERCENT TO/FROM PROJECT

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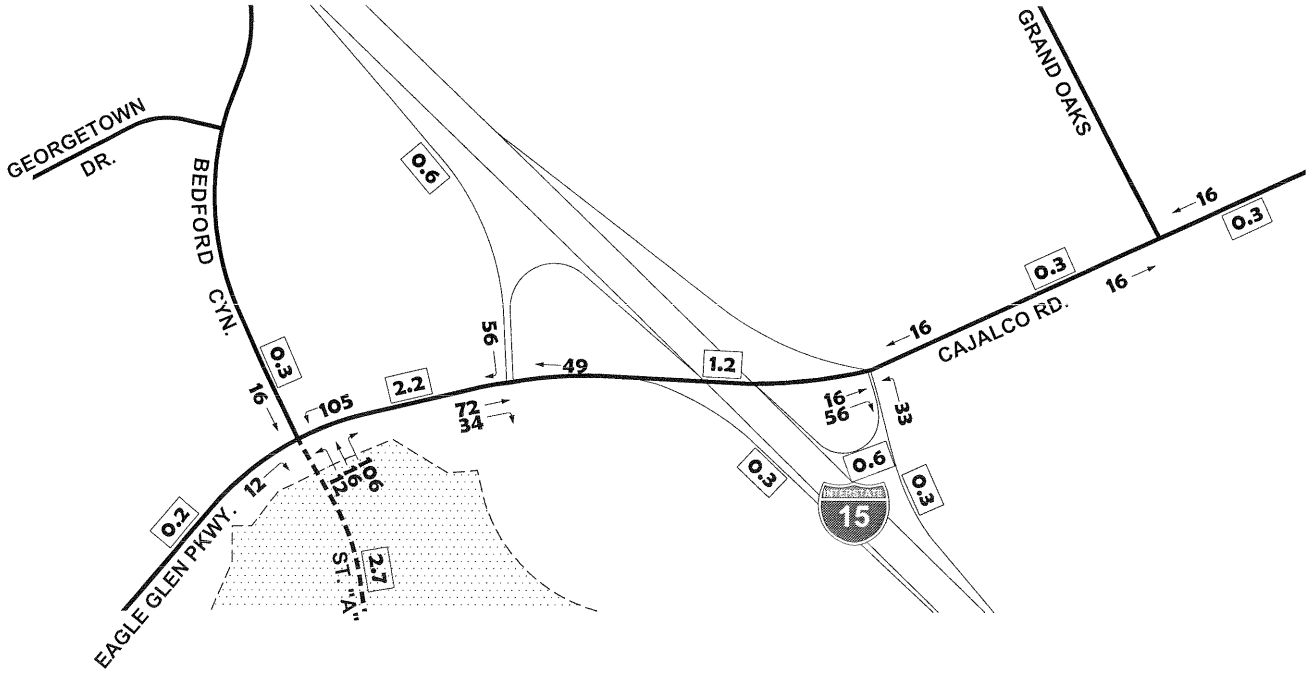
EXHIBIT 7

PHASE 2 (2019) PASS-BY AND DIVERTED TRIPS



PM In	PM Out	Total
133	134	267

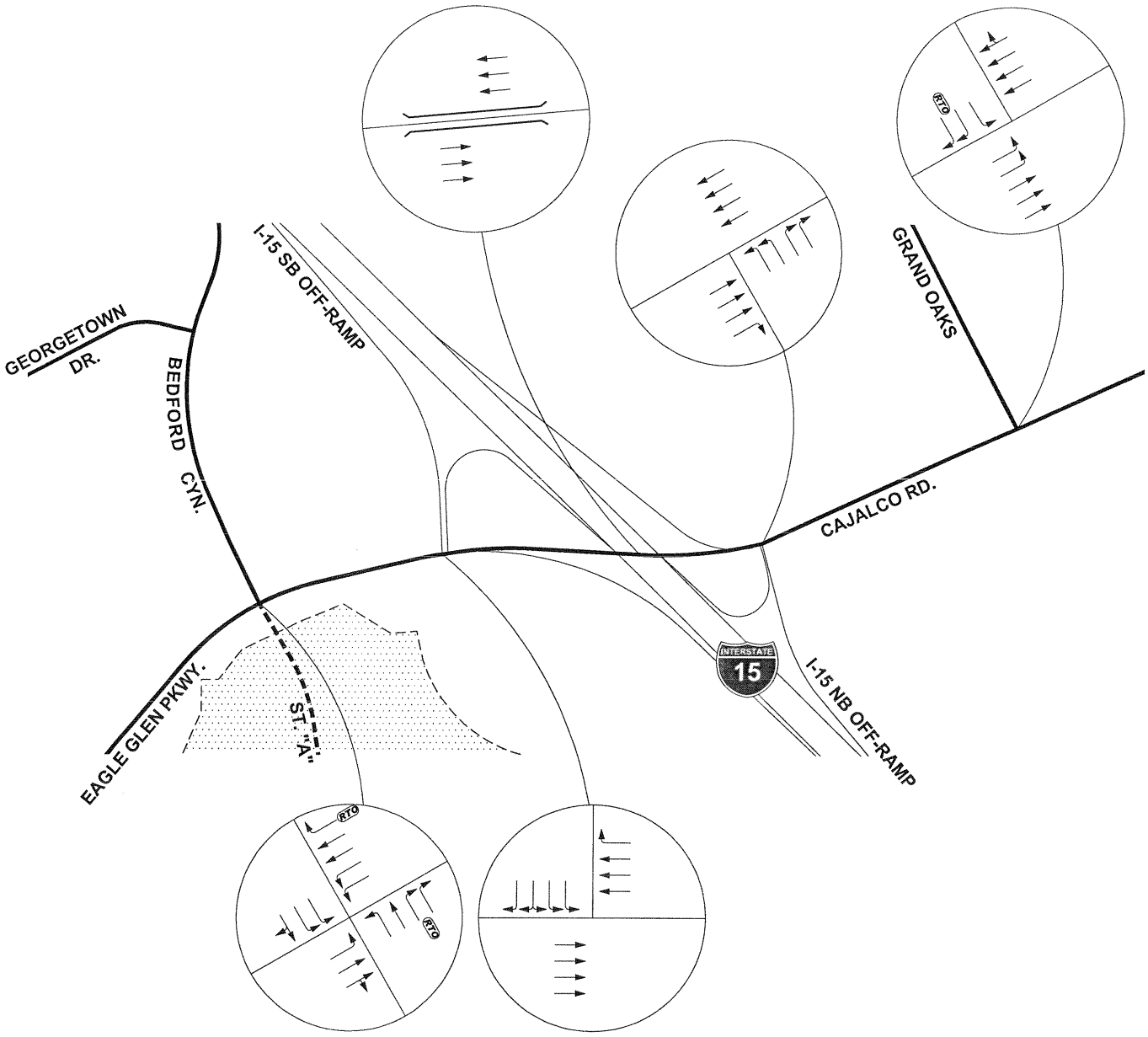
LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

10 = PM PEAK HOUR TRIPS

EXHIBIT 8

DRAFT LOCAL INTERCHANGE LAYOUT AT I-15 FREEWAY / CAJALCO ROAD (ULTIMATE BUILDOUT)



LEGEND:

RTO = RIGHT TURN OVERLAP

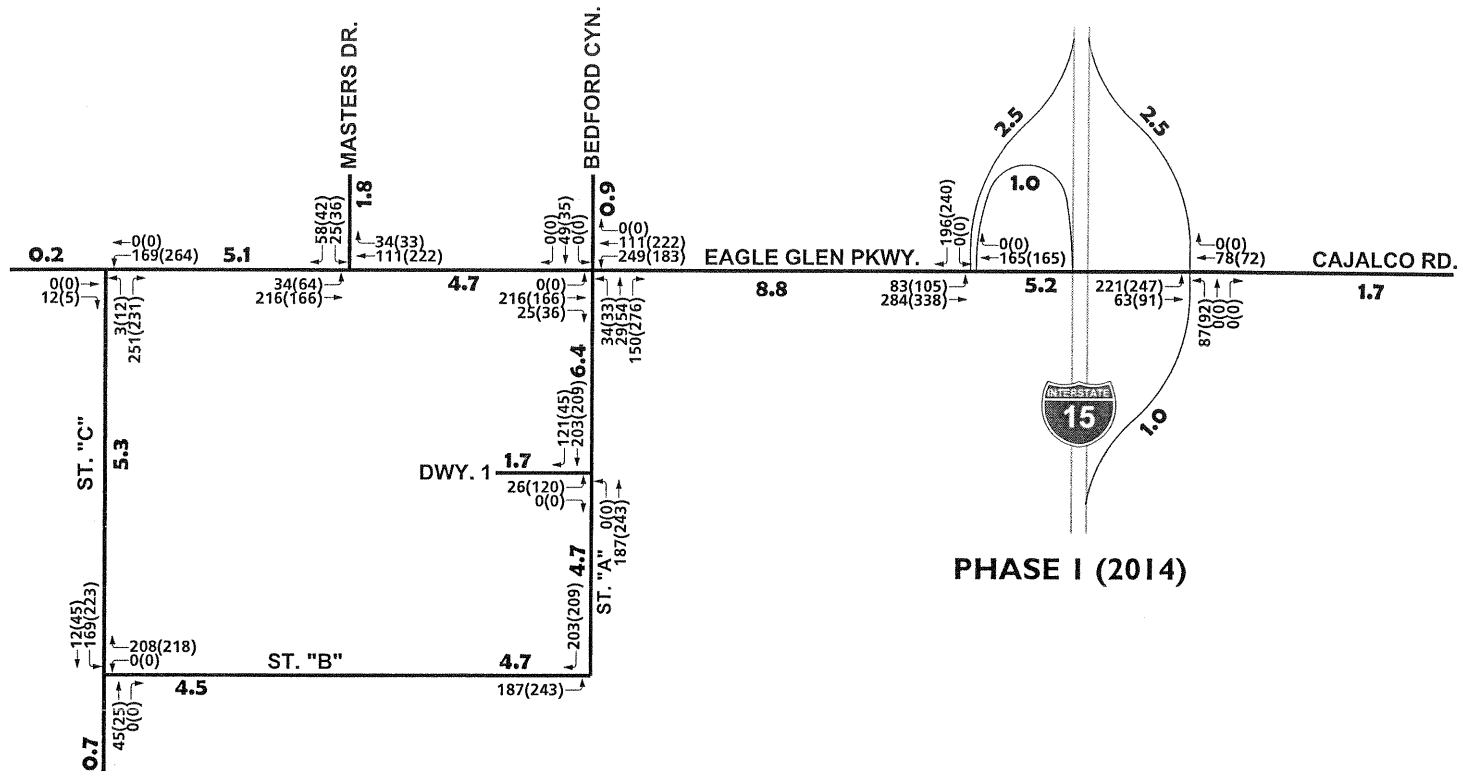
= TURN LANE

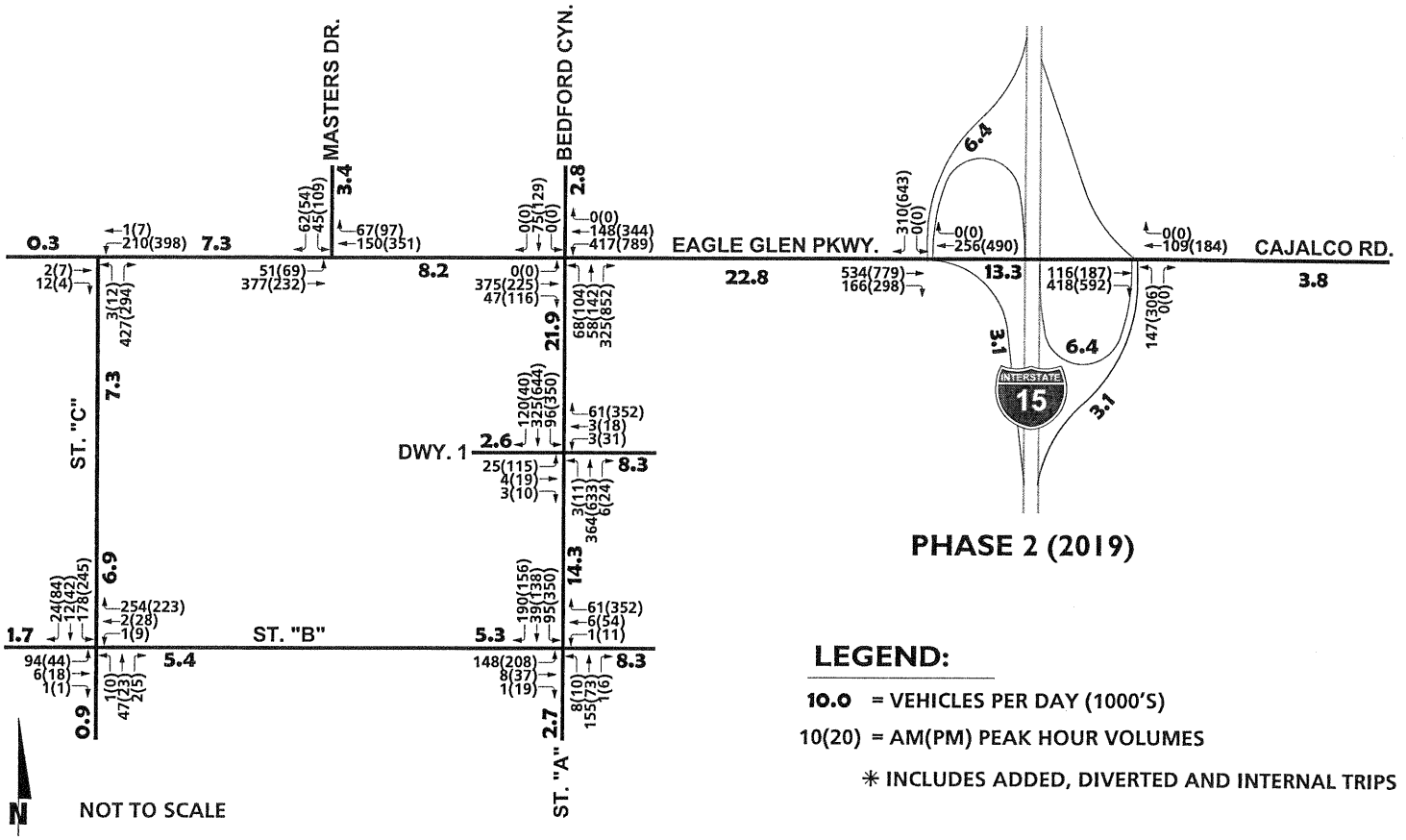
= THROUGH LANE

N

EXHIBIT 9

PROJECT ONLY VOLUMES THROUGH I-15 / CAJALCO ROAD INTERCHANGE





LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

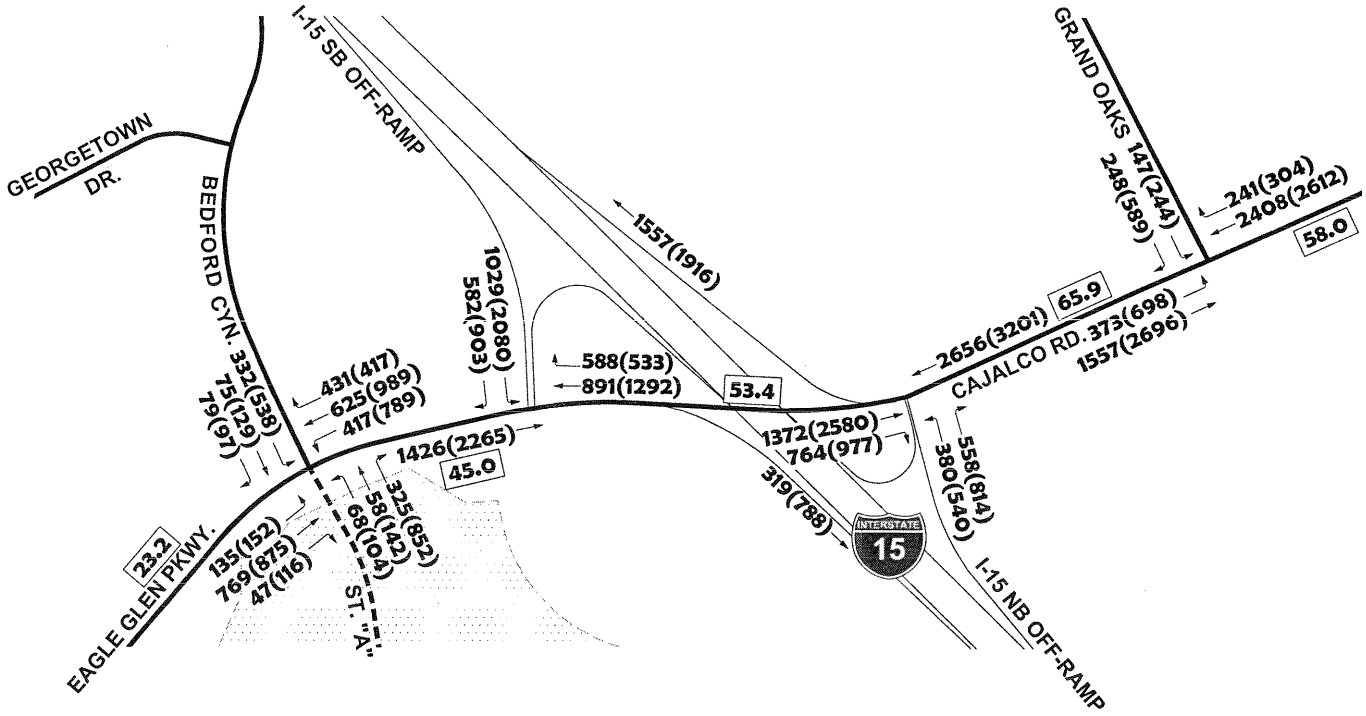
10(20) = AM(PM) PEAK HOUR VOLUMES

✳ INCLUDES ADDED, DIVERTED AND INTERNAL TRIPS

N NOT TO SCALE

EXHIBIT 10

GENERAL PLAN BUILDOUT ESTIMATED TOTAL TRAFFIC VOLUMES



LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

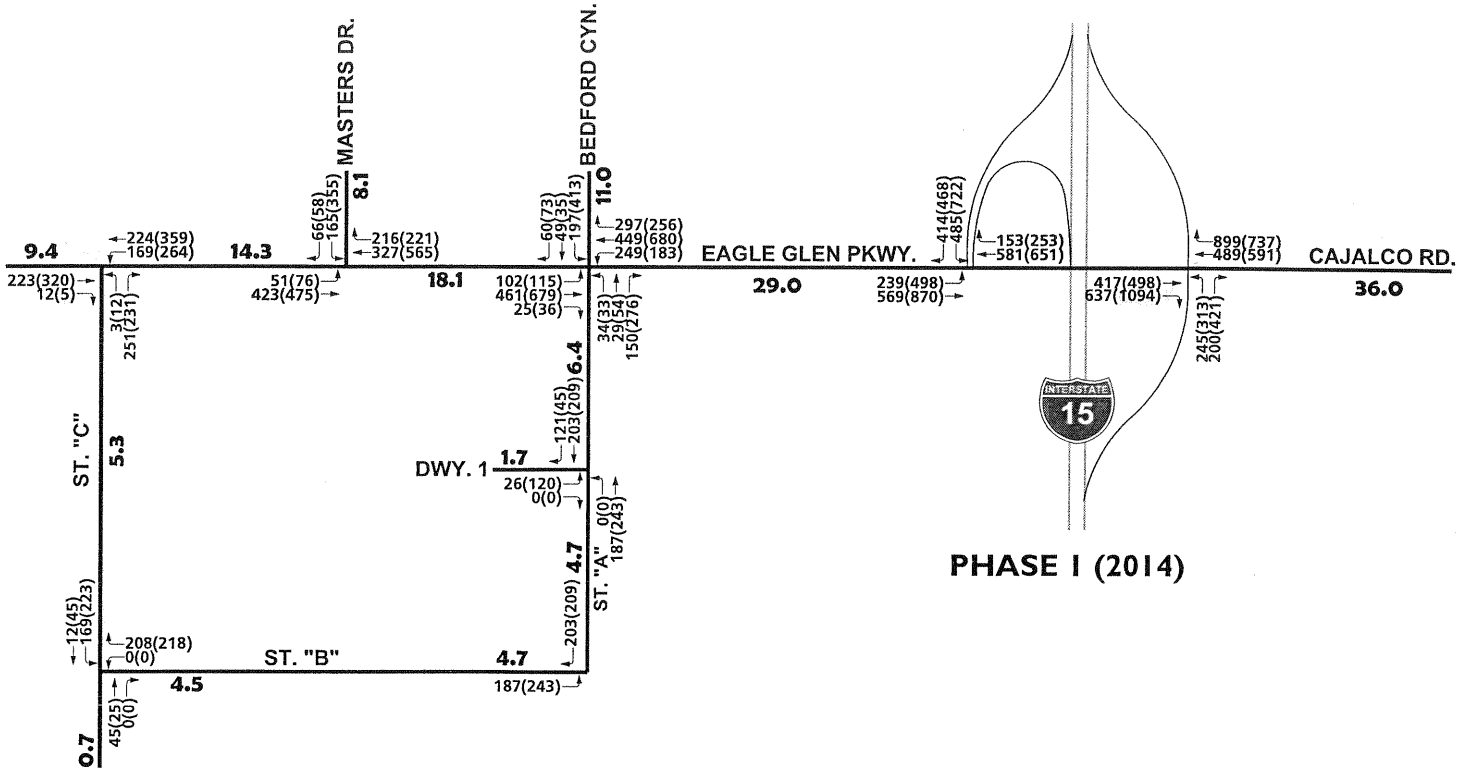
10(20) = AM(PM) PEAK HOUR VEHICLES

NOTE: THESE FORECASTS REPRESENT CUMULATIVE PLUS PROJECT CONDITIONS WITHOUT THE MCP.

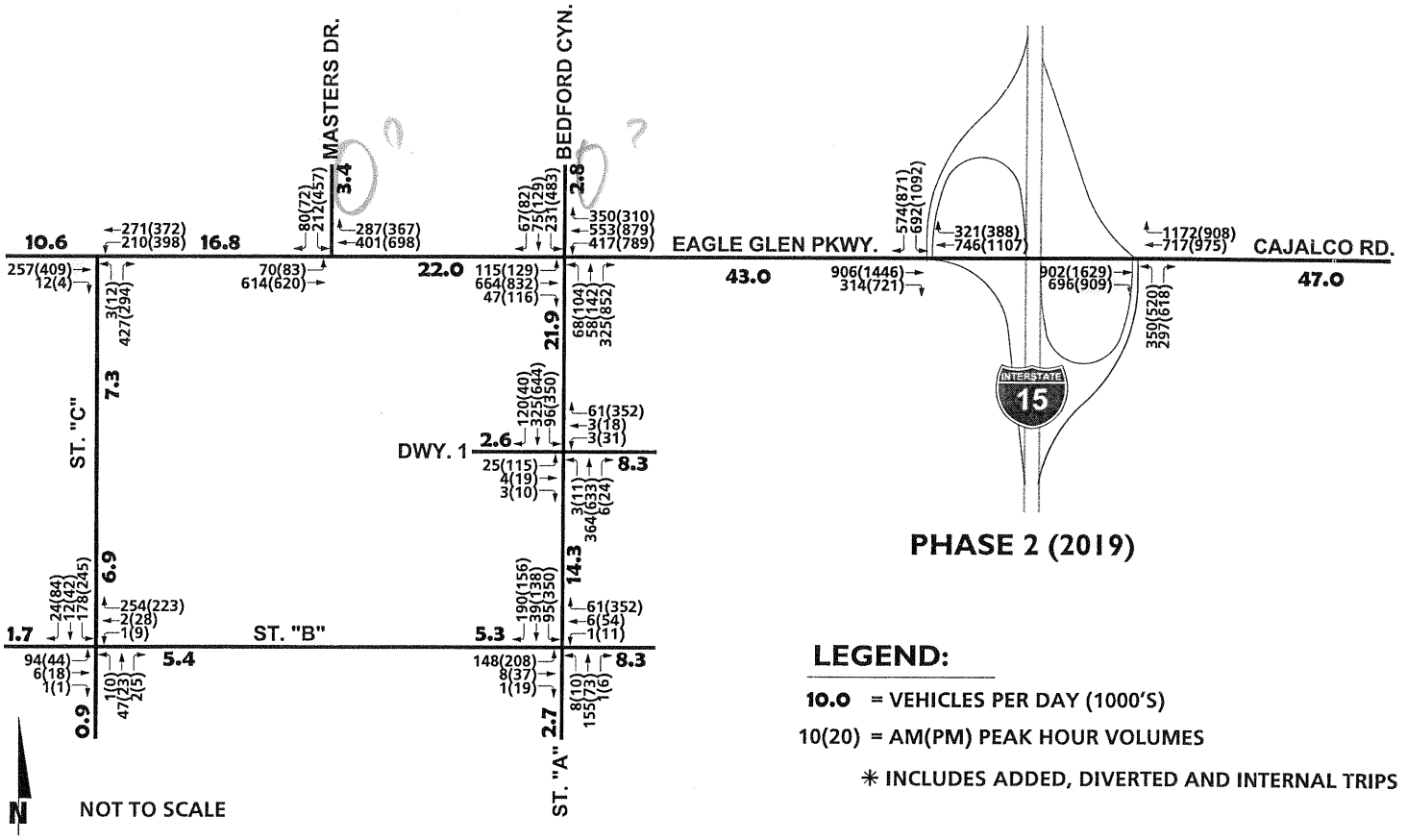
N

EXHIBIT 11

ESTIMATED 2014 AND 2019 TOTAL VOLUMES THROUGH I-15 / CAJALCO ROAD INTERCHANGE



PHASE 1 (2014)



PHASE 2 (2019)

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

10(20) = AM(PM) PEAK HOUR VOLUMES

✳ INCLUDES ADDED, DIVERTED AND INTERNAL TRIPS

Table 1

Arantine Hills Specific Plan Land Use Quantities

Land Use Quantity[1]			
Description	**Phase 1 (2014)**	**Phase 2 (2019)**	**Total Cumulative**
Single Family Detached Homes	310 DU	239 DU	549 DU
Multi-Family Attached Residential	597 DU	475 DU	1,072 DU
Passive Park	3.0 AC	1.0 AC	4.0 AC
Active Park	11.0 AC	-	11.0 AC
General Office	59.00 TSF	-	59.0 TSF
Business Park	230.90 TSF	-	230.9 TSF
Specialty Retail	59.00 TSF	-	59.0 TSF
Shopping Center	-	396.4 TSF	396.4 TSF

[1] DU = Dwelling Units; TSF = Thousand Square Feet of gross floor area; AC = Acres

Table 2

Project Trip Generation Rates[1]

No.	Land Use	ITE Code	Units[2]	Peak Hour Trip Rates						Daily
				AM			PM			
				In	Out	Total	In	Out	Total	
1	Single Family Detached Homes	210	DU	0.19	0.56	0.75	0.64	0.37	1.01	9.57
2	Apartments	220	DU	0.10	0.41	0.51	0.40	0.22	0.62	6.65
3	Multi-Family Attached Residential	230	DU	0.07	0.37	0.44	0.35	0.17	0.52	5.81
4	Senior Residential (Attached)	251	DU	0.05	0.08	0.13	0.10	0.06	0.16	3.48
5	Passive Park	--[3]	AC	0.11	0.10	0.21	0.07	0.07	0.14	1.59
6	Active Park	--[4]	AC	0.88	0.74	1.62	2.35	2.35	4.70	41.76
7	General Office	710	TSF	1.83	0.25	2.08	0.42	2.04	2.46	15.06
8	Business Park	770	TSF	1.20	0.23	1.43	0.30	0.99	1.29	12.76
9	Specialty Retail[5]	814	TSF	0.72	0.48	1.20	1.19	1.52	2.71	44.32
10	Shopping Center (396.4 TSF)	820	TSF	0.53	0.34	0.87	1.98	2.06	4.04	41.94

1 Source: ITE (Institute of Transportation Engineers) Trip Generation Manual, 8th Edition, 2008.

2 DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

3 Source for AM and PM peak hour percentages of daily and AM/PM in and out splits: (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002. Daily trip rate is per the ITE Trip Generation Manual.

4 Source: Laguna Hills Community Center Park Growth Management/CMP Traffic Analysis (1997, RKJK and Associates, Inc.)

5 Source for AM peak hour percentage of daily and in/out split: (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002. AM peak hour rates unavailable in the ITE Trip Generation Manual.

Table 3

Phase 1 (2014) Arantine Hills Specific Plan
Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
8	Active Park	11.0 AC	10	8	18	26	26	52	459
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Specialty Retail	59.0 TSF	42	28	70	70	90	160	2,615
	General Office	59.0 TSF	108	15	123	25	120	145	889
	Subtotal		***182***	***210***	***392***	***253***	***287***	***540***	***6,124***
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
Grand Total			**537**	**498**	**1,035**	**598**	**682**	**1,280**	**13,348**
Internal Capture Total[2]			***32***	***32***	***64***	***76***	***76***	***152***	***1,627***
External Total[2]			**505**	**466**	**971**	**522**	**606**	**1,128**	**11,721**

[1] DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

[2] Information obtained from Tables 4, 5 and 6.

Table 4

Phase 1 (2014) Arantine Hills Specific Plan
Internal and External Daily Vehicle Trip Generation Characteristics

Land Use	Vehicle Trip Ends			
	Daily Trip Ends	Percent Internal Capture	Internal Trip Ends	External Trip Ends
Single Family Detached Homes	2,966	12%	356	2,610
Multi-Family Attached Residential	3,468	12%	416	3,052
Passive Park	5	70%	4	1
Active Park	459	50%	230	229
General Office	889	7%	62	827
Business Park	2,946	7%	206	2,740
Specialty Retail	2,615	13%	353	2,262
Total	**13,348**	**12%**	**1,627**	**11,721**

Trip Summary		
Internal	814	6%
External	11,721	94%
Total	**12,535**	**100%**

Table 5

Phase 1 (2014) Arantine Hills Specific Plan
Internal and External AM Peak Hour Vehicle Trip Generation Characteristics

Land Use	AM Peak Hour Trip Ends										
	AM Total			AM Internal					AM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	58	173	231	4%	5%	2	9	11	56	164	220
Multi-Family Attached Residential	42	221	263	4%	5%	2	11	13	40	210	250
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	10	8	18	50%	50%	5	4	9	5	4	9
General Office	108	15	123	5%	7%	5	1	6	103	14	117
Business Park	277	53	330	5%	7%	14	4	18	263	49	312
Specialty Retail	42	28	70	10%	11%	4	3	7	38	25	63
Total	**537**	**498**	**1,035**	**6%**	**6%**	**32**	**32**	**64**	**505**	**466**	**971**

Trip Summary		
Internal	32	3%
External	971	97%
Total	**1,003**	**100%**

Table 6

Phase 1 (2014) Arantine Hills Specific Plan
Internal and External PM Peak Hour Vehicle Trip Generation Characteristics

Land Use	PM Peak Hour Trip Ends										
	PM Total			PM Internal					PM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	199	115	314	12%	12%	24	14	38	175	101	276
Multi-Family Attached Residential	209	102	311	12%	12%	25	12	37	184	90	274
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	26	26	52	50%	50%	13	13	26	13	13	26
General Office	25	120	145	7%	8%	2	10	12	23	110	133
Business Park	69	229	298	7%	8%	5	18	23	64	211	275
Specialty Retail	70	90	160	10%	10%	7	9	16	63	81	144
Total	**598**	**682**	**1,280**	**13%**	**11%**	**76**	**76**	**152**	**522**	**606**	**1,128**

Trip Summary		
Internal	76	6%
External	1,128	94%
Total	**1,204**	**100%**

Table 7

Phase 1 (2014) Arantine Hills Specific Plan
External Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
	Internal Capture[2]		-	3	3	6	3	9	102
	Total		***10***	***51***	***61***	***45***	***22***	***67***	***746***
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
	Internal Capture[2]		1	4	5	10	6	16	154
	Total		***24***	***71***	***95***	***76***	***44***	***120***	***1,128***
8	Active Park	11.0 AC	10	8	18	26	26	52	459
	Internal Capture[2]		5	4	9	13	13	26	230
	Total		***5***	***4***	***9***	***13***	***13***	***26***	***229***
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
	Internal Capture[2]		-	-	-	-	-	-	1
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
	Internal Capture[2]		1	3	4	7	4	11	103
	Total		***16***	***47***	***63***	***51***	***29***	***80***	***758***
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
	Internal Capture[2]		1	2	3	7	4	11	99
	Total		***15***	***46***	***61***	***48***	***28***	***76***	***724***
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
	Internal Capture[2]		-	-	-	-	-	-	2
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Internal Capture[2] *(Multi-Family Residential)*		1	8	9	19	9	28	314
	Specialty Retail	59.0 TSF	42	28	70	70	90	160	2,615
	Internal Capture[2] *(Specialty Retail)*		4	3	7	7	9	16	353
	General Office	59.0 TSF	108	15	123	25	120	145	889
	Internal Capture[2] *(General Office)*		5	1	6	2	10	12	62
	Subtotal - Internal Capture[2]		***10***	***12***	***22***	***28***	***28***	***56***	***729***
	Total		***172***	***198***	***370***	***225***	***259***	***484***	***5,395***
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
	Internal Capture[2]		14	4	18	5	18	23	206
	Total		***263***	***49***	***312***	***64***	***211***	***275***	***2,740***
Grand Total			**537**	**498**	**1,035**	**598**	**682**	**1,280**	**13,348**
Internal Capture Total[2]			***32***	***32***	***64***	***76***	***76***	***152***	***1,626***
External Total			**505**	**466**	**971**	**522**	**606**	**1,128**	**11,722**

[1] DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

[2] Internal capture based upon percentages identified in the ITE Trip Generation Handbook (2nd Edition), as presented on Tables 4, 5 and 6.

Table 8

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
1	Single Family Detached Homes	60 DU	11	34	45	38	22	60	574
2	Single Family Detached Homes	28 DU	5	16	21	18	10	28	268
3	Passive Park	1.0 AC	-	-	-	-	-	-	2
4	Single Family Detached Homes	103 DU	20	58	78	66	38	104	986
5	Single Family Detached Homes	48 DU	9	27	36	31	18	49	459
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
8	Active Park	11.0 AC	10	8	18	26	26	52	459
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Specialty Retail	59 TSF	42	28	70	70	90	160	2,615
	General Office	59 TSF	108	15	123	25	120	145	889
	Subtotal		***182***	***210***	***392***	***253***	***287***	***540***	***6,124***
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
15	Shopping Center	396.4 TSF	210	135	345	785	817	1,602	16,625
16	Multi-Family Residential	475 DU	33	176	209	166	81	247	2,760
Grand Total			**825**	**944**	**1,769**	**1,702**	**1,668**	**3,370**	**35,022**
Internal Capture Total[2]			***62***	***63***	***125***	***266***	***263***	***529***	***5,505***
External Total[2]			**763**	**881**	**1,644**	**1,436**	**1,405**	**2,841**	**29,517**

1 DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

2 Information obtained from Tables 9, 10 and 11.

Table 9

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Internal and External Daily Vehicle Trip Generation Characteristics

Land Use	Vehicle Trip Ends			
	Daily Trip Ends	Percent Internal Capture	Internal Trip Ends	External Trip Ends
Single Family Detached Homes	5,253	17%	898	4,355
Multi-Family Attached Residential	6,228	17%	1,064	5,164
Passive Park	7	70%	5	2
Active Park	459	50%	230	229
General Office	889	19%	165	724
Business Park	2,946	19%	546	2,400
Specialty Retail	2,615	13%	353	2,262
Shopping Center	16,625	13%	2,244	14,381
Total	**35,022**	**16%**	**5,505**	**29,517**

Trip Summary		
Internal	2,753	9%
External	29,517	91%
TOTAL	**32,270**	**100%**

Table 10

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Internal and External AM Peak Hour Vehicle Trip Generation Characteristics

Land Use	AM Peak Hour Trip Ends										
	AM Total			AM Internal					AM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	103	308	411	6%	5%	6	15	21	97	293	390
Multi-Family Attached Residential	75	397	472	6%	5%	5	20	25	70	377	447
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	10	8	18	50%	50%	5	4	9	5	4	9
General Office	108	15	123	6%	12%	6	2	8	102	13	115
Business Park	277	53	330	6%	12%	17	6	23	260	47	307
Specialty Retail	42	28	70	9%	10%	4	3	7	38	25	63
Shopping Center	210	135	345	9%	10%	19	13	32	191	122	313
Total	**825**	**944**	**1,769**	**8%**	**7%**	**62**	**63**	**125**	**763**	**881**	**1,644**

Trip Summary		
Internal	63	4%
External	1,644	96%
Total	**1,707**	**100%**

Table 11

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
Internal and External PM Peak Hour Vehicle Trip Generation Characteristics

Land Use	PM Peak Hour Trip Ends										
	PM Total			PM Internal					PM External		
	In	Out	Total	In%	Out%	In	Out	Total	In	Out	Total
Single Family Detached Homes	352	203	555	19%	21%	67	43	110	285	160	445
Multi-Family Attached Residential	375	183	558	19%	21%	71	38	109	304	145	449
Passive Park	0	0	0	70%	70%	0	0	0	0	0	0
Active Park	26	26	52	50%	50%	13	13	26	13	13	26
General Office	25	120	145	22%	12%	6	14	20	19	106	125
Business Park	69	229	298	22%	12%	15	27	42	54	202	256
Specialty Retail	70	90	160	11%	16%	8	14	22	62	76	138
Shopping Center	785	817	1,602	11%	14%	86	114	200	699	703	1,402
Total	**1,702**	**1,668**	**3,370**	**16%**	**16%**	**266**	**263**	**529**	**1,436**	**1,405**	**2,841**

Trip Summary		
Internal	265	9%
External	2,841	91%
Total	**3,106**	**100%**

Table 12
(1 of 2)

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
External Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
1	Single Family Detached Homes	60 DU	11	34	45	38	22	60	574
	Internal Capture[2]		*1*	*2*	*3*	*7*	*5*	*12*	*98*
	Total		***10***	***32***	***42***	***31***	***17***	***48***	***476***
2	Single Family Detached Homes	28 DU	5	16	21	18	10	28	268
	Internal Capture[2]		*-*	*1*	*1*	*3*	*2*	*5*	*46*
	Total		***5***	***15***	***20***	***15***	***8***	***23***	***222***
3	Passive Park	1.0 AC	-	-	-	-	-	-	2
	Internal Capture[2]		-	-	-	-	-	-	*1*
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
4	Single Family Detached Homes	103 DU	20	58	78	66	38	104	986
	Internal Capture[2]		*1*	*3*	*4*	*13*	*8*	*21*	*168*
	Total		***19***	***55***	***74***	***53***	***30***	***83***	***818***
5	Single Family Detached Homes	48 DU	9	27	36	31	18	49	459
	Internal Capture[2]		*1*	*1*	*2*	*6*	*4*	*10*	*78*
	Total		***8***	***26***	***34***	***25***	***14***	***39***	***381***
6	Multi-Family Attached Residential	146 DU	10	54	64	51	25	76	848
	Internal Capture[2]		*1*	*3*	*4*	*10*	*5*	*15*	*145*
	Total		***9***	***51***	***60***	***41***	***20***	***61***	***703***
7	Single Family Detached Homes	134 DU	25	75	100	86	50	136	1,282
	Internal Capture[2]		*2*	*4*	*6*	*16*	*11*	*27*	*219*
	Total		***23***	***71***	***94***	***70***	***39***	***109***	***1,063***
8	Active Park	11.0 AC	10	8	18	26	26	52	459
	Internal Capture[2]		*5*	*4*	*9*	*13*	*13*	*26*	*230*
	Total		***5***	***4***	***9***	***13***	***13***	***26***	***229***
9	Passive Park	1.0 AC	-	-	-	-	-	-	2
	Internal Capture[2]		-	-	-	-	-	-	*1*
	Total		***-***	***-***	***-***	***-***	***-***	***-***	***1***
10	Single Family Detached Homes	90 DU	17	50	67	58	33	91	861
	Internal Capture[2]		*1*	*3*	*4*	*11*	*7*	*18*	*147*
	Total		***16***	***47***	***63***	***47***	***26***	***73***	***714***
11	Single Family Detached Homes	86 DU	16	48	64	55	32	87	823
	Internal Capture[2]		*1*	*2*	*3*	*10*	*7*	*17*	*141*
	Total		***15***	***46***	***61***	***45***	***25***	***70***	***682***

Table 12
(2 of 2)

Project Buildout (2019 Cumulative) Arantine Hills Specific Plan
External Trip Generation Summary By Planning Area

PA	Land Use	Quantity[1]	Vehicle Trip Ends						
			Peak Hour						Daily
			AM			PM			
			In	Out	Total	In	Out	Total	
12	Passive Park	2.0 AC	-	-	-	-	-	-	3
	Internal Capture[2]		-	-	-	-	-	-	*2*
	Total		**-**	**-**	**-**	**-**	**-**	**-**	***1***
13	Multi-Family Attached Residential	451 DU	32	167	199	158	77	235	2,620
	Internal Capture[2] (Multi-Family Residential)		*2*	*8*	*10*	*30*	*16*	*46*	*448*
	Specialty Retail	59.0 TSF	42	28	70	70	90	160	2,615
	Internal Capture[2] (Specialty Retail)		*4*	*3*	*7*	*8*	*14*	*22*	*353*
	General Office	59.0 TSF	108	15	123	25	120	145	889
	Internal Capture[2] (General Office)		*6*	*2*	*8*	*6*	*14*	*20*	*165*
	Subtotal - Internal Capture[2]		***12***	***13***	***25***	***44***	***44***	***88***	***966***
	Total		**170**	**197**	**367**	**209**	**243**	**452**	**5,158**
14	Business Park	230.9 TSF	277	53	330	69	229	298	2,946
	Internal Capture[2]		*17*	*6*	*23*	*15*	*27*	*42*	*546*
	Total		***260***	***47***	***307***	***54***	***202***	***256***	***2,400***
15	Shopping Center	396.4 TSF	210	135	345	785	817	1,602	16,625
	Internal Capture[2]		*19*	*13*	*32*	*86*	*114*	*200*	*2,244*
	Pass-by/Diverted Trip Reduction[3]	*19%*	-	-	-	*-133*	*-134*	*-267*	*-2,732*
	Total		***191***	***122***	***313***	***699***	***703***	***1,402***	***14,381***
16	Multi-Family Attached Residential	475 DU	33	176	209	166	81	247	2,760
	Internal Capture[2]		*2*	*9*	*11*	*32*	*17*	*49*	*472*
	Total		***31***	***167***	***198***	***134***	***64***	***198***	***2,288***
Grand Total			**825**	**944**	**1,769**	**1,702**	**1,668**	**3,370**	**35,022**
Internal Capture[2] Total			**63**	**64**	**127**	**266**	**264**	**530**	**5,504**
External Total			**762**	**880**	**1,642**	**1,436**	**1,404**	**2,840**	**29,518**
Pass-By/Diverted Trip Reduction (19%)[3]			**-**	**-**	**-**	**-133**	**-134**	**-267**	**-2,732**
External Total (Less Pass-By/Diverted Trips)			**762**	**880**	**1,642**	**1,303**	**1,270**	**2,573**	**26,786**

1 DU = Dwelling Units; TSF = Thousand Square Feet; AC = Acres

2 Internal capture based upon percentages identified in the ITE Trip Generation Handbook (2nd Edition), as presented on Tables 9, 10 and 11.

3 Source for pass-by and diverted trip reduction: ITE Trip Generation Handbook, 2nd Edition, June 2004. Average pass-by trip reduction of 19% for the 3 study cases in California. Only applicable to PA 15. These trips will be manually added back to the intersections of Bedford Canyon Road at Eagle Glen Parkway and at the I-15 Freeway ramps on Cajalco Road.

Table 13

General Plan Buildout Conditions
Intersection Operations Analysis Summary

Intersection		Traffic	Intersection Approach Lanes[1]												Delay[2] (Sec.)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
No.	Name	Control[3]	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Bedford Cyn. Rd. (NS) at: • Eagle Glen Pkwy. (EW)	TS	1	1	2>	2	1	0	1	2	0	2	2	1>	33.0	41.4	C	D
2	I-15 SB Ramps (NS) at: • Cajalco Rd. (EW)	TS	0	0	0	2.5	0	1.5	0	4	0	0	3	1	21.0	29.8	C	C
3	I-15 NB Ramps (NS) at: • Cajalco Rd. (EW)	TS	2	0	2	0	0	0	0	3	1	0	4	0	15.9	22.4	B	C
4	Grand Oaks (NS) at: • Cajalco Rd. (EW)	TS	0	0	0	1	0	2>	2	3	0	0	4	0	16.7	28.5	B	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (20') for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; 1! = Left-Thru-Right Lane; 1> = Right Turn Overlap

[2] Delay and level of service calculated using the following analysis software: Traffix, Version 8.0 (2008). Per the 2000 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown.

[3] TS = Traffic Signal

Intersection Operations Analysis Worksheets (Page 1 of 4)

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Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.554
Loss Time (sec):	16	Average Delay (sec/veh):	33.0
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Include			Ovl		
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 1	0 2	2	0 0	1 0	1	0 1	1 0	2	0 2	0 1
Volume Module:												
Base Vol:	68	58	325	332	75	79	135	769	47	417	625	431
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	58	325	332	75	79	135	769	47	417	625	431
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	72	61	342	349	79	83	142	809	49	439	658	454
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	72	61	342	349	79	83	142	809	49	439	658	454
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	72	61	342	349	79	83	142	809	49	439	658	454
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.88	0.97	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Lanes:	1.00	1.00	2.00	2.00	0.49	0.51	1.00	1.88	0.12	2.00	2.00	1.00
Final Sat.:	1900	1900	3344	3686	925	975	1900	3402	208	3686	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.04	0.03	0.10	0.09	0.09	0.09	0.07	0.24	0.24	0.12	0.18	0.24
Crit Moves:	****					****		****		****		
Green/Cycle:	0.08	0.11	0.32	0.12	0.15	0.15	0.20	0.42	0.42	0.21	0.43	0.56
Volume/Cap:	0.45	0.29	0.32	0.76	0.56	0.56	0.38	0.56	0.56	0.56	0.42	0.43
Delay/Veh:	54.4	49.9	31.0	58.0	49.9	49.9	42.3	26.9	26.9	43.4	23.7	15.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	54.4	49.9	31.0	58.0	49.9	49.9	42.3	26.9	26.9	43.4	23.7	15.6
LOS by Move:	D	D	C	E	D	D	D	C	C	D	C	B
HCM2kAvgQ:	3	2	5	8	6	6	5	13	13	7	8	9

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.861
Loss Time (sec):	16	Average Delay (sec/veh):	41.4
Optimal Cycle:	120	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Include			Ovl		
Min. Green:	10	10	10	10	10	10	10	10	10	10	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 1	0 2	2	0 0	1 0	1	0 1	1 0	2	0 2	0 1
Volume Module:												
Base Vol:	104	142	852	538	129	97	152	875	116	789	989	417
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	104	142	852	538	129	97	152	875	116	789	989	417
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	109	149	897	566	136	102	160	921	122	831	1041	439
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	109	149	897	566	136	102	160	921	122	831	1041	439
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	109	149	897	566	136	102	160	921	122	831	1041	439
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.88	0.97	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Lanes:	1.00	1.00	2.00	2.00	0.57	0.43	1.00	1.77	0.23	2.00	2.00	1.00
Final Sat.:	1900	1900	3344	3686	1085	815	1900	3187	423	3686	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.06	0.08	0.27	0.15	0.13	0.13	0.08	0.29	0.29	0.23	0.29	0.23
Crit Moves:		****		****				****		****		
Green/Cycle:	0.11	0.09	0.35	0.18	0.16	0.16	0.13	0.34	0.34	0.26	0.46	0.64
Volume/Cap:	0.53	0.86	0.76	0.86	0.77	0.77	0.62	0.86	0.86	0.86	0.62	0.36
Delay/Veh:	53.4	86.6	37.3	59.1	59.7	59.7	53.8	43.8	43.8	50.2	25.1	10.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	53.4	86.6	37.3	59.1	59.7	59.7	53.8	43.8	43.8	50.2	25.1	10.3
LOS by Move:	D	F	D	E	E	E	D	D	D	D	C	B
HCM2kAvgQ:	5	8	18	13	10	10	7	22	22	16	15	7

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.596
Loss Time (sec):	8	Average Delay (sec/veh):	21.0
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	10	0	10	0	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	2	0 1! 0	1	0	0 4	0 0	0	0 3	0 1
Volume Module:												
Base Vol:	0	0	0	1029	0	582	0	1426	0	0	891	588
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	1029	0	582	0	1426	0	0	891	588
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	1083	0	613	0	1501	0	0	938	619
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	1083	0	613	0	1501	0	0	938	619
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	1083	0	613	0	1501	0	0	938	619
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Lanes:	0.00	0.00	0.00	2.55	0.00	1.45	0.00	4.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	4697	0	2758	0	6916	0	0	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.23	0.00	0.22	0.00	0.22	0.00	0.00	0.18	0.33
Crit Moves:				****								****
Green/Cycle:	0.00	0.00	0.00	0.39	0.00	0.39	0.00	0.55	0.00	0.00	0.55	0.55
Volume/Cap:	0.00	0.00	0.00	0.60	0.00	0.57	0.00	0.40	0.00	0.00	0.33	0.60
Delay/Veh:	0.0	0.0	0.0	29.7	0.0	29.3	0.0	15.8	0.0	0.0	15.1	19.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	29.7	0.0	29.3	0.0	15.8	0.0	0.0	15.1	19.3
LOS by Move:	A	A	A	C	A	C	A	B	A	A	B	B
HCM2kAvgQ:	0	0	0	13	0	12	0	8	0	0	7	15

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.857
Loss Time (sec):	8	Average Delay (sec/veh):	29.8
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	10	0	10	0	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	2	0 1! 0	1	0	0 4	0 0	0	0 3	0 1
Volume Module:												
Base Vol:	0	0	0	2080	0	903	0	2265	0	0	1292	533
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	2080	0	903	0	2265	0	0	1292	533
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	2189	0	951	0	2384	0	0	1360	561
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	2189	0	951	0	2384	0	0	1360	561
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	2189	0	951	0	2384	0	0	1360	561
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Lanes:	0.00	0.00	0.00	2.61	0.00	1.39	0.00	4.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	4816	0	2636	0	6916	0	0	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.45	0.00	0.36	0.00	0.34	0.00	0.00	0.26	0.30
Crit Moves:				****				****				
Green/Cycle:	0.00	0.00	0.00	0.53	0.00	0.53	0.00	0.40	0.00	0.00	0.40	0.40
Volume/Cap:	0.00	0.00	0.00	0.86	0.00	0.68	0.00	0.86	0.00	0.00	0.65	0.73
Delay/Veh:	0.0	0.0	0.0	26.4	0.0	21.1	0.0	35.5	0.0	0.0	29.8	34.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	26.4	0.0	21.1	0.0	35.5	0.0	0.0	29.8	34.1
LOS by Move:	A	A	A	C	A	C	A	D	A	A	C	C
HCM2kAvgQ:	0	0	0	30	0	19	0	21	0	0	14	17

Note: Queue reported is the number of cars per lane.

Intersection Operations Analysis Worksheets (Page 3 of 4)

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Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.642
Loss Time (sec): 8 Average Delay (sec/veh): 15.9
Optimal Cycle: 120 Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Split Phase				Split Phase				Permitted				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	10	0	10		0	0	0		0	10	0		0	10	0	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0	0	0 2	0	0	0	0 0	0	0	3	0 1	0	0	4	0 0
Volume Module:																
Base Vol:	380	0	558		0	0	0		0	1372	764		0	2656	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	380	0	558		0	0	0		0	1372	764		0	2656	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	400	0	587		0	0	0		0	1444	804		0	2796	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	400	0	587		0	0	0		0	1444	804		0	2796	0	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	400	0	587		0	0	0		0	1444	804		0	2796	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.97	1.00	0.88		1.00	1.00	1.00		1.00	0.91	1.00		1.00	0.91	1.00	
Lanes:	2.00	0.00	2.00		0.00	0.00	0.00		0.00	3.00	1.00		0.00	4.00	0.00	
Final Sat.:	3686	0	3344		0	0	0		0	5187	1900		0	6916	0	
Capacity Analysis Module:																
Vol/Sat:	0.11	0.00	0.18		0.00	0.00	0.00		0.00	0.28	0.42		0.00	0.40	0.00	
Crit Moves:			****								****					
Green/Cycle:	0.27	0.00	0.27		0.00	0.00	0.00		0.00	0.66	0.66		0.00	0.66	0.00	
Volume/Cap:	0.40	0.00	0.64		0.00	0.00	0.00		0.00	0.42	0.64		0.00	0.61	0.00	
Delay/Veh:	35.8	0.0	40.0		0.0	0.0	0.0		0.0	9.7	13.2		0.0	11.9	0.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	35.8	0.0	40.0		0.0	0.0	0.0		0.0	9.7	13.2		0.0	11.9	0.0	
LOS by Move:	D		A	D	A		A	A		A	B		A	B	A	
HCM2kAvgQ:	6		0	11	0		0	0		0	9	17		0	16	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.854
Loss Time (sec): 8 Average Delay (sec/veh): 22.4
Optimal Cycle: 120 Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	-	T	- R	L	-	T	- R	L	-	T	- R	L	-	T	- R
Control:	Split Phase				Split Phase				Permitted				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	10	0	10		0	0	0		0	10	0		0	10	0	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0	0	0 2	0	0	0	0 0	0	0	3	0 1	0	0	4	0 0
Volume Module:																
Base Vol:	540	0	814		0	0	0		0	2580	977		0	3201	0	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	540	0	814		0	0	0		0	2580	977		0	3201	0	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	568	0	857		0	0	0		0	2716	1028		0	3369	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	568	0	857		0	0	0		0	2716	1028		0	3369	0	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	568	0	857		0	0	0		0	2716	1028		0	3369	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.97	1.00	0.88		1.00	1.00	1.00		1.00	0.91	1.00		1.00	0.91	1.00	
Lanes:	2.00	0.00	2.00		0.00	0.00	0.00		0.00	3.00	1.00		0.00	4.00	0.00	
Final Sat.:	3686	0	3344		0	0	0		0	5187	1900		0	6916	0	
Capacity Analysis Module:																
Vol/Sat:	0.15	0.00	0.26		0.00	0.00	0.00		0.00	0.52	0.54		0.00	0.49	0.00	
Crit Moves:			****								****					
Green/Cycle:	0.30	0.00	0.30		0.00	0.00	0.00		0.00	0.63	0.63		0.00	0.63	0.00	
Volume/Cap:	0.51	0.00	0.85		0.00	0.00	0.00		0.00	0.83	0.85		0.00	0.77	0.00	
Delay/Veh:	35.2	0.0	46.8		0.0	0.0	0.0		0.0	18.8	23.7		0.0	16.6	0.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	35.2	0.0	46.8		0.0	0.0	0.0		0.0	18.8	23.7		0.0	16.6	0.0	
LOS by Move:	D		A	D	A		A	A		A	B	C		A	B	A
HCM2kAvgQ:	9		0	19	0		0	0		0	27	29		0	23	0

Note: Queue reported is the number of cars per lane.

Intersection Operations Analysis Worksheets (Page 4 of 4)

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Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.657
Loss Time (sec): 12 Average Delay (sec/veh): 16.7
Optimal Cycle: 120 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	10	0	10	10	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	2	2	0	3	0	0
Volume Module:												
Base Vol:	0	0	0	147	0	248	373	1557	0	0	2408	241
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	147	0	248	373	1557	0	0	2408	241
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	155	0	261	393	1639	0	0	2535	254
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	155	0	261	393	1639	0	0	2535	254
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	155	0	261	393	1639	0	0	2535	254
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	0.88	0.97	0.91	1.00	1.00	0.91	0.91
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	3.00	0.00	0.00	3.64	0.36
Final Sat.:	0	0	0	1900	0	3344	3686	5187	0	0	6287	629
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.08	0.11	0.32	0.00	0.00	0.40	0.40
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.12	0.00	0.29	0.16	0.78	0.00	0.00	0.61	0.61
Volume/Cap:	0.00	0.00	0.00	0.66	0.00	0.27	0.66	0.41	0.00	0.00	0.66	0.66
Delay/Veh:	0.0	0.0	0.0	56.7	0.0	33.3	49.8	4.5	0.0	0.0	15.4	15.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	56.7	0.0	33.3	49.8	4.5	0.0	0.0	15.4	15.4
LOS by Move:	A	A	A	E	A	C	D	A	A	A	B	B
HCM2kAvgQ:	0	0	0	7	0	4	7	7	0	0	18	18

Note: Queue reported is the number of cars per lane.

PM (GPBO) Tue Sep 1, 2009 19:37:41 Page 6-1

Arantine Hills Specific Plan (JN: 06694)
General Plan Buildout Peak Hour Conditions
With Improved Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.921
Loss Time (sec): 12 Average Delay (sec/veh): 28.5
Optimal Cycle: 120 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	10	0	10	10	10	0	0	10	10
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	2	2	0	3	0	0
Volume Module:												
Base Vol:	0	0	0	244	0	589	698	2696	0	0	2612	304
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	244	0	589	698	2696	0	0	2612	304
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	257	0	620	735	2838	0	0	2749	320
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	257	0	620	735	2838	0	0	2749	320
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	257	0	620	735	2838	0	0	2749	320
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	1.00	1.00	0.88	0.97	0.91	1.00	1.00	0.91	0.91
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	3.00	0.00	0.00	3.58	0.42
Final Sat.:	0	0	0	1900	0	3344	3686	5187	0	0	6195	721
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.14	0.00	0.19	0.20	0.55	0.00	0.00	0.44	0.44
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.20	0.00	0.42	0.22	0.70	0.00	0.00	0.48	0.48
Volume/Cap:	0.00	0.00	0.00	0.67	0.00	0.44	0.92	0.78	0.00	0.00	0.92	0.92
Delay/Veh:	0.0	0.0	0.0	48.8	0.0	25.2	61.8	13.2	0.0	0.0	33.8	33.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	48.8	0.0	25.2	61.8	13.2	0.0	0.0	33.8	33.8
LOS by Move:	A	A	A	D	A	C	E	B	A	A	C	C
HCM2kAvgQ:	0	0	0	10	0	9	14	25	0	0	32	32

Note: Queue reported is the number of cars per lane.

APPENDIX 2.1

Traffic Count Data Sheets

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: California Avenue
Weather: Sunny

File Name : CORMACAAM
Site Code : 9250991
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

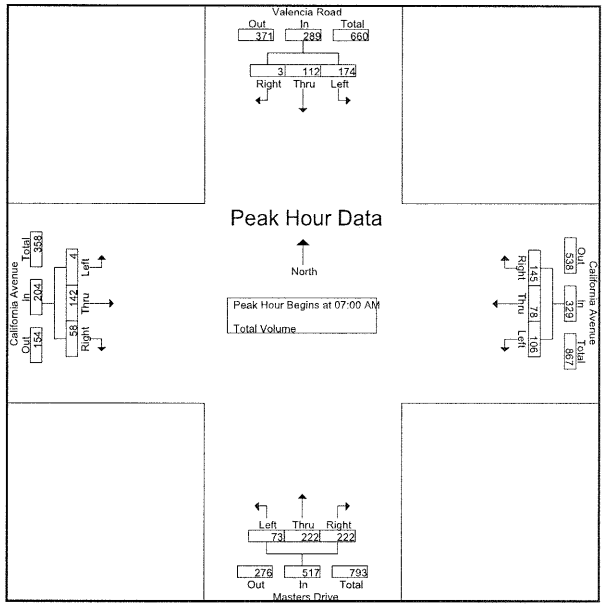
	Valencia Road Southbound				California Avenue Westbound				Masters Drive Northbound				California Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	35	21	0	56	12	15	26	53	18	56	62	136	0	26	11	37	282
07:15 AM	35	18	0	53	27	23	42	92	20	59	82	161	0	61	8	69	375
07:30 AM	59	36	2	97	41	25	65	131	17	71	48	136	4	36	17	57	421
07:45 AM	45	37	1	83	26	15	12	53	18	36	30	84	0	19	22	41	261
Total	174	112	3	289	106	78	145	329	73	222	222	517	4	142	58	204	1339
08:00 AM	5	10	1	16	16	15	6	37	13	19	27	59	1	26	15	42	154
08:15 AM	9	8	0	17	15	18	3	36	29	25	30	84	1	29	8	38	175
08:30 AM	7	16	1	24	24	19	7	50	38	25	34	97	1	16	10	27	198
08:45 AM	7	12	0	19	25	7	2	34	15	21	38	74	0	20	12	32	159
Total	28	46	2	76	80	59	18	157	95	90	129	314	3	91	45	139	686
Grand Total	202	158	5	365	186	137	163	486	168	312	351	831	7	233	103	343	2025
Apprch %	55.3	43.3	1.4		38.3	28.2	33.5		20.2	37.5	42.2		2	67.9	30		
Total %	10	7.8	0.2	18	9.2	6.8	8	24	8.3	15.4	17.3	41	0.3	11.5	5.1	16.9	

	Valencia Road Southbound				California Avenue Westbound				Masters Drive Northbound				California Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	35	21	0	56	12	15	26	53	18	56	62	136	0	26	11	37	282
07:15 AM	35	18	0	53	27	23	42	92	**20**	59	**82**	**161**	0	**61**	8	**69**	375
07:30 AM	**59**	36	**2**	**97**	**41**	**25**	**65**	**131**	17	**71**	48	136	**4**	36	17	57	**421**
07:45 AM	45	**37**	1	83	26	15	12	53	18	36	30	84	0	19	**22**	41	261
Total Volume	174	112	3	289	106	78	145	329	73	222	222	517	4	142	58	204	1339
% App. Total	60.2	38.8	1		32.2	23.7	44.1		14.1	42.9	42.9		2	69.6	28.4		
PHF	.737	.757	.375	.745	.646	.780	.558	.628	.913	.782	.677	.803	.250	.582	.659	.739	.795

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: California Avenue
Weather: Sunny

File Name : CORMACAAM
Site Code : 9250991
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:15 AM			
+0 mins.	35	21	0	56	12	15	26	53	18	56	62	136	0	**61**	8	**69**
+15 mins.	35	18	0	53	27	23	42	92	**20**	59	**82**	**161**	**4**	36	17	57
+30 mins.	**59**	36	**2**	**97**	**41**	**25**	**65**	**131**	17	**71**	48	136	0	19	22	41
+45 mins.	45	**37**	1	83	26	15	12	53	18	36	30	84	1	26	15	42
Total Volume	174	112	3	289	106	78	145	329	73	222	222	517	5	142	62	209
% App. Total	60.2	38.8	1		32.2	23.7	44.1		14.1	42.9	42.9		2.4	67.9	29.7	
PHF	.737	.757	.375	.745	.646	.780	.558	.628	.913	.782	.677	.803	.313	.582	.705	.757

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: California Avenue
Weather: Sunny

File Name : CORMACAPM
Site Code : 9250991
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Valencia Road Southbound				California Avenue Westbound				Masters Drive Northbound				California Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	5	22	0	27	45	17	6	68	13	17	26	56	1	16	25	42	193
04:15 PM	10	18	0	28	47	16	11	74	9	14	36	59	0	24	21	45	206
04:30 PM	8	13	0	21	63	20	8	91	11	13	22	46	1	16	31	48	206
04:45 PM	7	29	0	36	41	16	10	67	8	17	22	47	0	18	21	39	189
Total	30	82	0	112	196	69	35	300	41	61	106	208	2	74	98	174	794
05:00 PM	4	23	0	27	44	24	4	72	12	15	29	56	2	21	30	53	208
05:15 PM	6	21	1	28	48	29	2	79	14	17	29	60	0	16	39	55	222
05:30 PM	5	30	0	35	43	17	5	65	15	15	25	55	1	24	25	50	205
05:45 PM	13	20	0	33	59	18	7	84	14	14	38	66	0	12	30	42	225
Total	28	94	1	123	194	88	18	300	55	61	121	237	3	73	124	200	860
Grand Total	58	176	1	235	390	157	53	600	96	122	227	445	5	147	222	374	1654
Apprch %	24.7	74.9	0.4		65	26.2	8.8		21.6	27.4	51		1.3	39.3	59.4		
Total %	3.5	10.6	0.1	14.2	23.6	9.5	3.2	36.3	5.8	7.4	13.7	26.9	0.3	8.9	13.4	22.6	

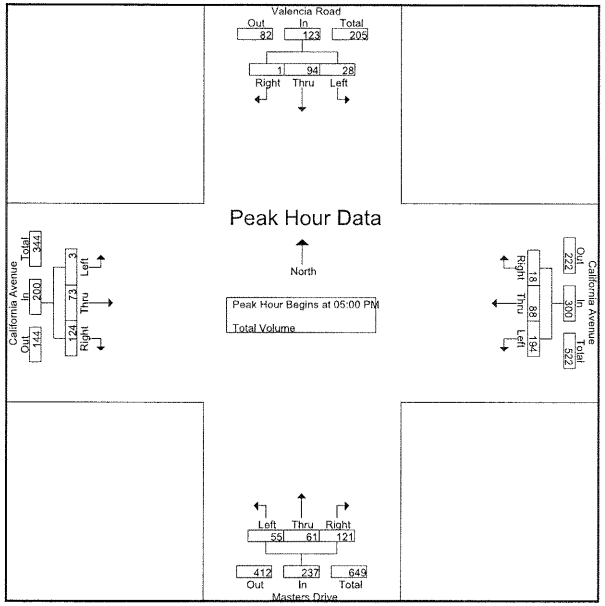
	Valencia Road Southbound				California Avenue Westbound				Masters Drive Northbound				California Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	4	23	0	27	44	24	4	72	12	15	29	56	**2**	21	30	53	208
05:15 PM	6	21	**1**	28	48	**29**	2	79	14	**17**	29	60	0	16	**39**	**55**	222
05:30 PM	5	**30**	0	**35**	43	17	5	65	**15**	15	25	55	1	**24**	25	50	205
05:45 PM	**13**	20	0	33	**59**	18	**7**	**84**	14	14	**38**	**66**	0	12	30	42	**225**
Total Volume	28	94	1	123	194	88	18	300	55	61	121	237	3	73	124	200	860
% App. Total	22.8	76.4	0.8		64.7	29.3	6		23.2	25.7	51.1		1.5	36.5	62		
PHF	.538	.783	.250	.879	.822	.759	.643	.893	.917	.897	.796	.898	.375	.760	.795	.909	.956

2.1-2

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: California Avenue
Weather: Sunny

File Name : CORMACAPM
Site Code : 9250991
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				05:00 PM				05:00 PM			
+0 mins.	**7**	29	0	**36**	**63**	20	8	**91**	12	15	29	56	**2**	21	30	53
+15 mins.	4	23	0	27	41	16	**10**	67	14	**17**	29	60	0	16	**39**	**55**
+30 mins.	6	21	**1**	28	44	24	4	72	**15**	15	25	55	1	**24**	25	50
+45 mins.	5	**30**	0	35	48	**29**	2	79	14	14	**38**	**66**	0	12	30	42
Total Volume	22	103	1	126	196	89	24	309	55	61	121	237	3	73	124	200
% App. Total	17.5	81.7	0.8		63.4	28.8	7.8		23.2	25.7	51.1		1.5	36.5	62	
PHF	.786	.858	.250	.875	.778	.767	.600	.849	.917	.897	.796	.898	.375	.760	.795	.909

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Bennett Drive
Weather: Sunny

File Name : CORMABEAM
Site Code : 9250099
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

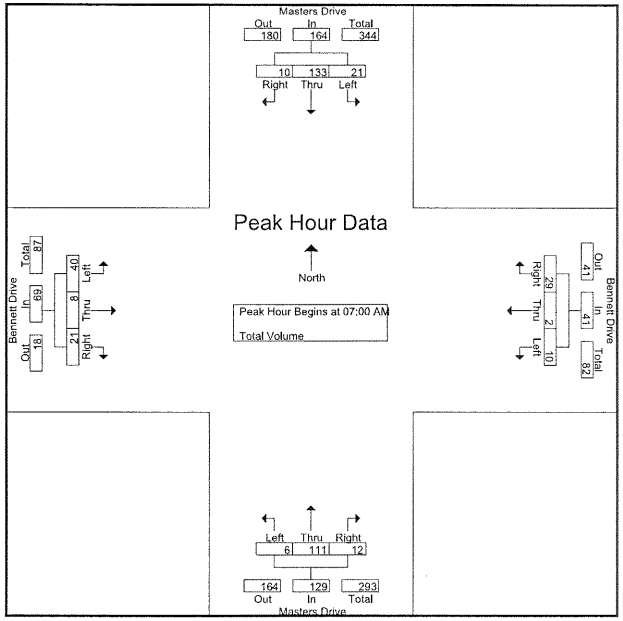
	Masters Drive Southbound				Bennett Drive Westbound				Masters Drive Northbound				Bennett Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	28	1	33	2	0	12	14	1	22	3	26	10	2	5	17	90
07:15 AM	6	28	2	36	2	0	9	11	1	41	3	45	17	1	5	23	115
07:30 AM	7	45	2	54	4	1	6	11	2	24	1	27	8	3	3	14	106
07:45 AM	4	32	5	41	2	1	2	5	2	24	5	31	5	2	8	15	92
Total	21	133	10	164	10	2	29	41	6	111	12	129	40	8	21	69	403
08:00 AM	2	25	1	28	1	2	2	5	2	19	1	22	5	1	5	11	66
08:15 AM	2	25	6	33	2	2	5	9	1	29	0	30	5	0	6	11	83
08:30 AM	2	24	6	32	0	2	10	12	1	20	3	24	7	0	2	9	77
08:45 AM	5	17	2	24	0	3	5	8	3	19	3	25	9	3	1	13	70
Total	11	91	15	117	3	9	22	34	7	87	7	101	26	4	14	44	296
Grand Total	32	224	25	281	13	11	51	75	13	198	19	230	66	12	35	113	699
Apprch %	11.4	79.7	8.9		17.3	14.7	68		5.7	86.1	8.3		58.4	10.6	31		
Total %	4.6	32	3.6	40.2	1.9	1.6	7.3	10.7	1.9	28.3	2.7	32.9	9.4	1.7	5	16.2	

	Masters Drive Southbound				Bennett Drive Westbound				Masters Drive Northbound				Bennett Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	4	28	1	33	2	0	**12**	**14**	1	22	3	26	10	2	5	17	90
07:15 AM	6	28	2	36	2	0	9	11	1	**41**	3	**45**	**17**	1	5	**23**	**115**
07:30 AM	**7**	**45**	2	**54**	**4**	**1**	6	11	**2**	24	1	27	8	**3**	3	14	106
07:45 AM	4	32	**5**	41	2	1	2	5	2	24	**5**	31	5	2	**8**	15	92
Total Volume	21	133	10	164	10	2	29	41	6	111	12	129	40	8	21	69	403
% App. Total	12.8	81.1	6.1		24.4	4.9	70.7		4.7	86	9.3		58	11.6	30.4		
PHF	.750	.739	.500	.759	.625	.500	.604	.732	.750	.677	.600	.717	.588	.667	.656	.750	.876

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Bennett Drive
Weather: Sunny

File Name : CORMABEAM
Site Code : 9250099
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	4	28	1	33	2	0	**12**	**14**	1	22	3	26	10	2	5	17
+15 mins.	6	28	2	36	2	0	9	11	1	**41**	3	**45**	**17**	1	5	**23**
+30 mins.	**7**	**45**	2	**54**	**4**	**1**	6	11	**2**	24	1	27	8	**3**	3	14
+45 mins.	4	32	**5**	41	2	1	2	5	2	24	**5**	31	5	2	**8**	15
Total Volume	21	133	10	164	10	2	29	41	6	111	12	129	40	8	21	69
% App. Total	12.8	81.1	6.1		24.4	4.9	70.7		4.7	86	9.3		58	11.6	30.4	
PHF	.750	.739	.500	.759	.625	.500	.604	.732	.750	.677	.600	.717	.588	.667	.656	.750

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Bennett Drive
Weather: Sunny

File Name : CORMABEPM
Site Code : 9250099
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

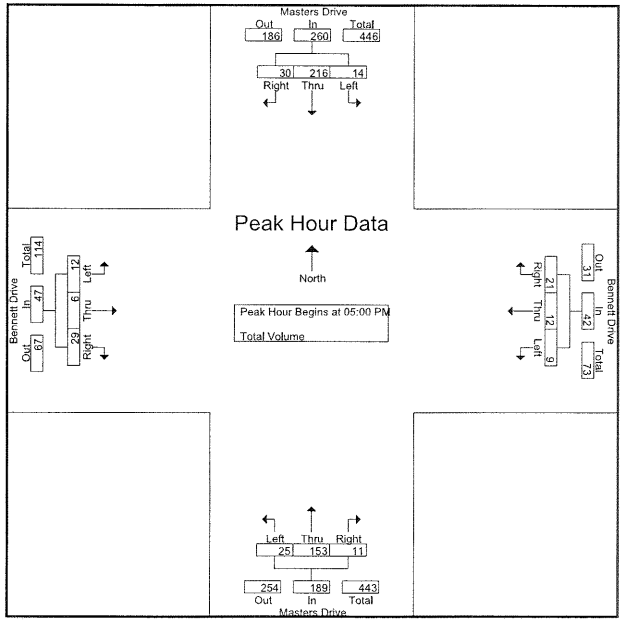
	Masters Drive Southbound				Bennett Drive Westbound				Masters Drive Northbound				Bennett Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	42	7	51	3	3	9	15	5	29	2	36	3	3	0	6	108
04:15 PM	4	43	7	54	4	3	5	12	11	27	1	39	5	4	6	15	120
04:30 PM	6	45	11	62	0	1	3	4	1	23	1	25	1	2	2	5	96
04:45 PM	4	52	5	61	0	3	4	7	4	35	2	41	2	0	3	5	114
Total	16	182	30	228	7	10	21	38	21	114	6	141	11	9	11	31	438
05:00 PM	2	58	10	70	1	2	6	9	7	32	5	44	5	0	12	17	140
05:15 PM	4	47	10	61	3	2	5	10	10	42	1	53	2	4	7	13	137
05:30 PM	6	60	2	68	4	1	4	9	3	41	2	46	2	1	2	5	128
05:45 PM	2	51	8	61	1	7	6	14	5	38	3	46	3	1	8	12	133
Total	14	216	30	260	9	12	21	42	25	153	11	189	12	6	29	47	538
Grand Total	30	398	60	488	16	22	42	80	46	267	17	330	23	15	40	78	976
Apprch %	6.1	81.6	12.3		20	27.5	52.5		13.9	80.9	5.2		29.5	19.2	51.3		
Total %	3.1	40.8	6.1	50	1.6	2.3	4.3	8.2	4.7	27.4	1.7	33.8	2.4	1.5	4.1	8	

	Masters Drive Southbound				Bennett Drive Westbound				Masters Drive Northbound				Bennett Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	58	**10**	**70**	**1**	2	**6**	9	7	32	**5**	44	**5**	0	**12**	**17**	**140**
05:15 PM	4	47	10	61	3	2	5	10	**10**	**42**	1	**53**	2	**4**	7	13	137
05:30 PM	**6**	**60**	2	68	**4**	1	4	9	3	41	2	46	2	1	2	5	128
05:45 PM	2	51	8	61	1	**7**	6	**14**	5	38	3	46	3	1	8	12	133
Total Volume	14	216	30	260	9	12	21	42	25	153	11	189	12	6	29	47	538
% App. Total	5.4	83.1	11.5		21.4	28.6	50		13.2	81	5.8		25.5	12.8	61.7		
PHF	.583	.900	.750	.929	.563	.429	.875	.750	.625	.911	.550	.892	.600	.375	.604	.691	.961

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Bennett Drive
Weather: Sunny

File Name : CORMABEPM
Site Code : 9250099
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	4	52	5	61	1	2	6	9	7	32	**5**	44	**5**	0	**12**	**17**
+15 mins.	2	58	**10**	**70**	3	2	5	10	**10**	**42**	1	**53**	2	**4**	7	13
+30 mins.	4	47	10	61	**4**	1	4	9	3	41	2	46	2	1	2	5
+45 mins.	**6**	**60**	2	68	1	**7**	6	**14**	5	38	3	46	3	1	8	12
Total Volume	16	217	27	260	9	12	21	42	25	153	11	189	12	6	29	47
% App. Total	6.2	83.5	10.4		21.4	28.6	50		13.2	81	5.8		25.5	12.8	61.7	
PHF	.667	.904	.675	.929	.563	.429	.875	.750	.625	.911	.550	.892	.600	.375	.604	.691

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORMAEGAM
Site Code : 9250049
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Masters Drive Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	28	1	29	14	21	35	1	59	60	124
07:15 AM	52	0	52	21	33	54	11	58	69	175
07:30 AM	76	1	77	27	38	65	1	71	72	214
07:45 AM	56	4	60	37	27	64	3	71	74	198
Total	212	6	218	99	119	218	16	259	275	711
08:00 AM	37	0	37	40	31	71	2	66	68	176
08:15 AM	46	3	49	41	25	66	2	47	49	164
08:30 AM	30	1	31	72	24	96	1	75	76	203
08:45 AM	17	4	21	104	27	131	2	105	107	259
Total	130	8	138	257	107	364	7	293	300	802
Grand Total	342	14	356	356	226	582	23	552	575	1513
Apprch %	96.1	3.9		61.2	38.8		4	96		
Total %	22.6	0.9	23.5	23.5	14.9	38.5	1.5	36.5	38	

	Masters Drive Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	37	0	37	40	**31**	71	**2**	66	68	176
08:15 AM	**46**	3	**49**	41	25	66	2	47	49	164
08:30 AM	30	1	31	72	24	96	1	75	76	203
08:45 AM	17	**4**	21	**104**	27	**131**	2	**105**	**107**	**259**
Total Volume	130	8	138	257	107	364	7	293	300	802
% App. Total	94.2	5.8		70.6	29.4		2.3	97.7		
PHF	.707	.500	.704	.618	.863	.695	.875	.698	.701	.774

Counts Unlimited Inc.
25286 Jaclyn Avenue
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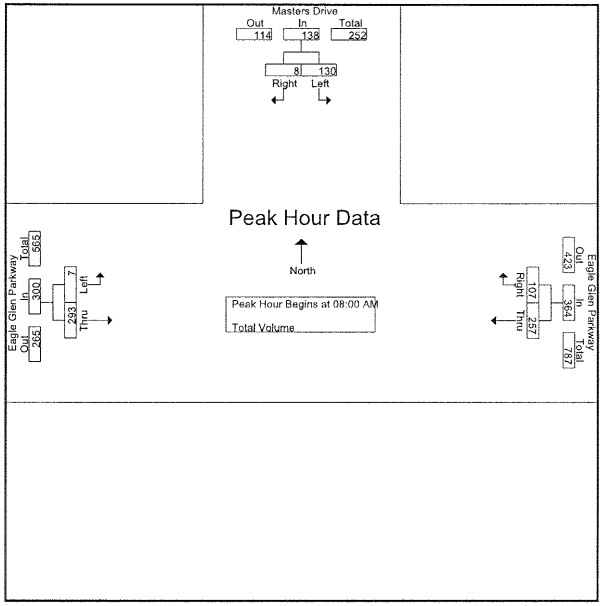
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORMAEGAM
Site Code : 9250049
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			08:00 AM			08:00 AM		
+0 mins.	52	0	52	40	**31**	71	2	66	68
+15 mins.	**76**	1	**77**	41	25	66	2	47	49
+30 mins.	56	**4**	60	72	24	96	1	75	76
+45 mins.	37	0	37	**104**	27	**131**	2	**105**	**107**
Total Volume	221	5	226	257	107	364	7	293	300
% App. Total	97.8	2.2		70.6	29.4		2.3	97.7	
PHF	.727	.313	.734	.618	.863	.695	.875	.698	.701

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORMAEGPM
Site Code : 9250049
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Masters Drive Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	38	2	40	71	48	119	4	37	41	200
04:15 PM	57	4	61	48	38	86	0	40	40	187
04:30 PM	43	8	51	63	37	100	1	46	47	198
04:45 PM	52	1	53	89	43	132	6	96	102	287
Total	190	15	205	271	166	437	11	219	230	872
05:00 PM	76	6	82	101	48	149	2	69	71	302
05:15 PM	55	7	62	67	64	131	5	50	55	248
05:30 PM	71	4	75	79	52	131	2	57	59	265
05:45 PM	65	2	67	71	74	145	2	70	72	284
Total	267	19	286	318	238	556	11	246	257	1099
Grand Total	457	34	491	589	404	993	22	465	487	1971
Apprch %	93.1	6.9		59.3	40.7		4.5	95.5		
Total %	23.2	1.7	24.9	29.9	20.5	50.4	1.1	23.6	24.7	

	Masters Drive Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	52	1	53	89	43	132	**6**	**96**	**102**	287
05:00 PM	**76**	**6**	**82**	**101**	**48**	**149**	2	69	71	**302**
05:15 PM	55	**7**	62	67	**64**	131	5	50	55	248
05:30 PM	71	4	75	79	52	131	2	57	59	265
Total Volume	254	18	272	336	207	543	15	272	287	1102
% App. Total	93.4	6.6		61.9	38.1		5.2	94.8		
PHF	.836	.643	.829	.832	.809	.911	.625	.708	.703	.912

Counts Unlimited Inc.
25286 Jaclyn Avenue
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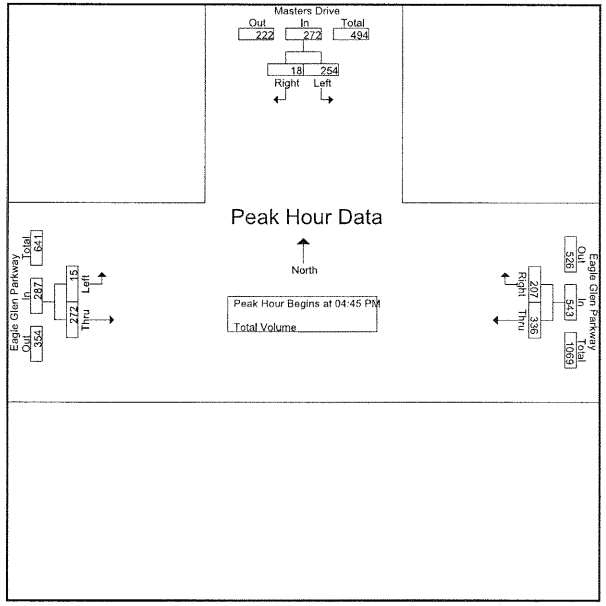
(951) 485-7934

City of Corona
N/S: Masters Drive
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORMAEGPM
Site Code : 9250049
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			04:45 PM		
+0 mins.	**76**	6	**82**	**101**	48	**149**	**6**	**96**	**102**
+15 mins.	55	**7**	62	67	64	131	2	69	71
+30 mins.	71	4	75	79	52	131	5	50	55
+45 mins.	65	2	67	71	**74**	145	2	57	59
Total Volume	267	19	286	318	238	556	15	272	287
% App. Total	93.4	6.6		57.2	42.8		5.2	94.8	
PHF	.878	.679	.872	.787	.804	.933	.625	.708	.703

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Bedford Canyon Road
E/W: E Foothill Parkway
Weather: Sunny

File Name : CORBCFOAM
Site Code : 9250281
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	E Foothill Parkway Westbound			Bedford Canyon Road Northbound			E Foothill Parkway Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	4	201	205	51	27	78	135	6	141	424
07:15 AM	3	227	230	57	23	80	181	4	185	495
07:30 AM	13	135	148	39	30	69	205	27	232	449
07:45 AM	8	105	113	29	24	53	160	9	169	335
Total	28	668	696	176	104	280	681	46	727	1703
08:00 AM	6	88	94	26	15	41	98	10	108	243
08:15 AM	14	76	90	34	28	62	115	9	124	276
08:30 AM	22	79	101	14	21	35	93	7	100	236
08:45 AM	10	61	71	10	12	22	96	9	105	198
Total	52	304	356	84	76	160	402	35	437	953
Grand Total	80	972	1052	260	180	440	1083	81	1164	2656
Apprch %	7.6	92.4		59.1	40.9		93	7		
Total %	3	36.6	39.6	9.8	6.8	16.6	40.8	3	43.8	

	E Foothill Parkway Westbound			Bedford Canyon Road Northbound			E Foothill Parkway Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	4	201	205	51	27	78	135	6	141	424
07:15 AM	3	**227**	**230**	**57**	23	**80**	181	4	185	**495**
07:30 AM	**13**	135	148	39	**30**	69	**205**	**27**	**232**	449
07:45 AM	8	105	113	29	24	53	160	9	169	335
Total Volume	28	668	696	176	104	280	681	46	727	1703
% App. Total	4	96		62.9	37.1		93.7	6.3		
PHF	.538	.736	.757	.772	.867	.875	.830	.426	.783	.860

Counts Unlimited Inc.
25286 Jaclyn Avenue
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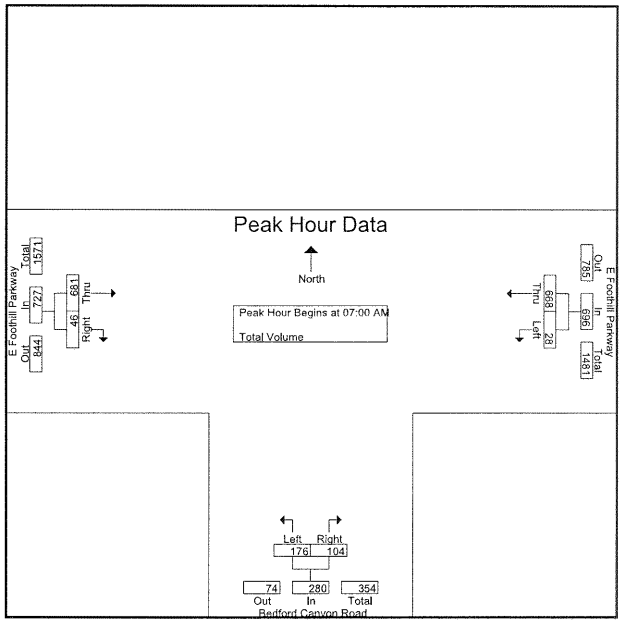
City of Corona
N/S: Bedford Canyon Road
E/W: E Foothill Parkway
Weather: Sunny

File Name : CORBCFOAM
Site Code : 9250281
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:00 AM			07:00 AM		
+0 mins.	4	201	205	51	27	78	135	6	141
+15 mins.	3	**227**	**230**	**57**	23	**80**	181	4	185
+30 mins.	**13**	135	148	39	**30**	69	**205**	**27**	**232**
+45 mins.	8	105	113	29	24	53	160	9	169
Total Volume	28	668	696	176	104	280	681	46	727
% App. Total	4	96		62.9	37.1		93.7	6.3	
PHF	.538	.736	.757	.772	.867	.875	.830	.426	.783

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Bedford Canyon Road
E/W: E Foothill Parkway
Weather: Sunny

File Name : CORBCFOPM
Site Code : 9250013
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	E Foothill Parkway Westbound			Bedford Canyon Road Northbound			E Foothill Parkway Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	43	100	143	23	30	53	181	32	213	409
04:15 PM	39	84	123	25	24	49	201	42	243	415
04:30 PM	41	79	120	15	20	35	191	37	228	383
04:45 PM	28	85	113	21	22	43	185	51	236	392
Total	151	348	499	84	96	180	758	162	920	1599
05:00 PM	36	113	149	34	19	53	212	46	258	460
05:15 PM	41	96	137	26	22	48	224	49	273	458
05:30 PM	50	96	146	19	27	46	226	34	260	452
05:45 PM	47	98	145	23	30	53	248	52	300	498
Total	174	403	577	102	98	200	910	181	1091	1868
Grand Total	325	751	1076	186	194	380	1668	343	2011	3467
Apprch %	30.2	69.8		48.9	51.1		82.9	17.1		
Total %	9.4	21.7	31	5.4	5.6	11	48.1	9.9	58	

	E Foothill Parkway Westbound			Bedford Canyon Road Northbound			E Foothill Parkway Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	36	**113**	**149**	**34**	19	**53**	212	46	258	460
05:15 PM	41	96	137	26	22	48	224	49	273	458
05:30 PM	**50**	96	146	19	27	46	226	34	260	452
05:45 PM	47	98	145	23	**30**	53	**248**	**52**	**300**	**498**
Total Volume	174	403	577	102	98	200	910	181	1091	1868
% App. Total	30.2	69.8		51	49		83.4	16.6		
PHF	.870	.892	.968	.750	.817	.943	.917	.870	.909	.938

Counts Unlimited Inc.
25286 Jaclyn Avenue
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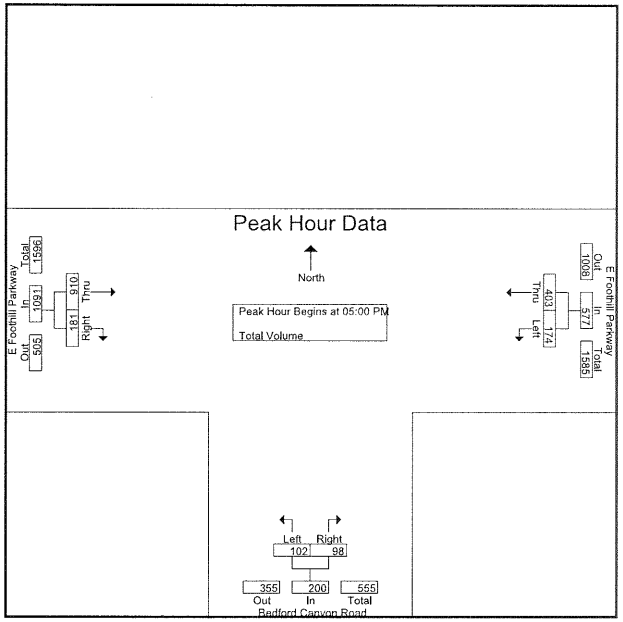
City of Corona
N/S: Bedford Canyon Road
E/W: E Foothill Parkway
Weather: Sunny

File Name : CORBCFOPM
Site Code : 9250013
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	36	**113**	**149**	**34**	19	**53**	212	46	258
+15 mins.	41	96	137	26	22	48	224	49	273
+30 mins.	**50**	96	146	19	27	46	226	34	260
+45 mins.	47	98	145	23	**30**	53	**248**	**52**	**300**
Total Volume	174	403	577	102	98	200	910	181	1091
% App. Total	30.2	69.8		51	49		83.4	16.6	
PHF	.870	.892	.968	.750	.817	.943	.917	.870	.909

Counts Unlimited Inc.
25286 Jaclyn Avenue
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City of Corona
N/S: Bedford Canyon Road
E/W: Georgetown Drive
Weather: Sunny

File Name : CORBCGEAM
Site Code : 9250056
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

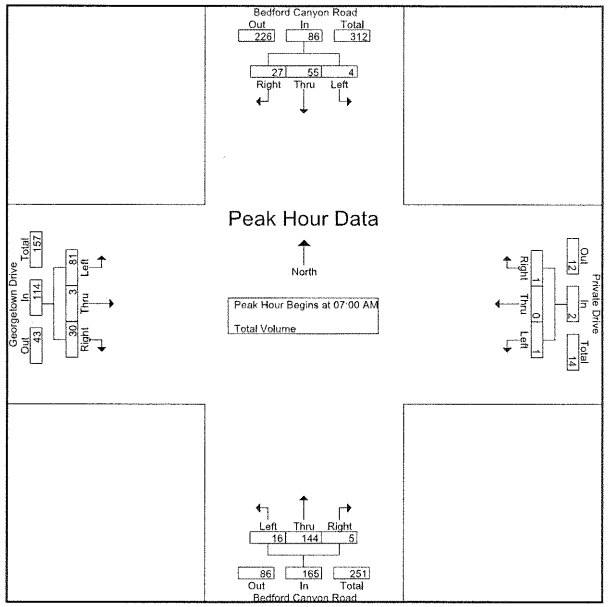
	Bedford Canyon Road Southbound				Private Drive Westbound				Bedford Canyon Road Northbound				Georgetown Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	8	5	13	0	0	0	0	6	30	0	36	21	2	10	33	82
07:15 AM	2	10	3	15	0	0	0	0	2	45	0	47	25	0	6	31	93
07:30 AM	1	14	9	24	0	0	0	0	3	41	3	47	22	1	8	31	102
07:45 AM	1	23	10	34	1	0	1	2	5	28	2	35	13	0	6	19	90
Total	4	55	27	86	1	0	1	2	16	144	5	165	81	3	30	114	367
08:00 AM	1	9	9	19	3	0	0	3	6	25	0	31	16	0	4	20	73
08:15 AM	0	17	5	22	2	0	0	2	4	30	0	34	16	0	4	20	78
08:30 AM	0	17	6	23	0	0	2	2	6	21	0	27	14	0	5	19	71
08:45 AM	0	21	12	33	0	0	0	0	3	19	0	22	8	0	4	12	67
Total	1	64	32	97	5	0	2	7	19	95	0	114	54	0	17	71	289
Grand Total	5	119	59	183	6	0	3	9	35	239	5	279	135	3	47	185	656
Apprch %	2.7	65	32.2		66.7	0	33.3		12.5	85.7	1.8		73	1.6	25.4		
Total %	0.8	18.1	9	27.9	0.9	0	0.5	1.4	5.3	36.4	0.8	42.5	20.6	0.5	7.2	28.2	

	Bedford Canyon Road Southbound				Private Drive Westbound				Bedford Canyon Road Northbound				Georgetown Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	8	5	13	0	0	0	0	**6**	30	0	36	21	**2**	**10**	**33**	82
07:15 AM	**2**	10	3	15	0	0	0	0	2	**45**	0	**47**	**25**	0	6	31	93
07:30 AM	1	14	9	24	0	0	0	0	3	41	**3**	47	22	1	8	31	**102**
07:45 AM	1	**23**	**10**	**34**	**1**	0	**1**	**2**	5	28	2	35	13	0	6	19	90
Total Volume	4	55	27	86	1	0	1	2	16	144	5	165	81	3	30	114	367
% App. Total	4.7	64	31.4		50	0	50		9.7	87.3	3		71.1	2.6	26.3		
PHF	.500	.598	.675	.632	.250	.000	.250	.250	.667	.800	.417	.878	.810	.375	.750	.864	.900

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Bedford Canyon Road
E/W: Georgetown Drive
Weather: Sunny

File Name : CORBCGEAM
Site Code : 9250056
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:00 AM				07:00 AM			
+0 mins.	**1**	14	9	24	1	0	1	2	**6**	30	0	36	21	**2**	**10**	**33**
+15 mins.	1	**23**	**10**	**34**	**3**	0	0	**3**	2	**45**	0	**47**	**25**	0	6	31
+30 mins.	1	9	9	19	2	0	0	2	3	41	**3**	47	22	1	8	31
+45 mins.	0	17	5	22	0	0	**2**	2	5	28	2	35	13	0	6	19
Total Volume	3	63	33	99	6	0	3	9	16	144	5	165	81	3	30	114
% App. Total	3	63.6	33.3		66.7	0	33.3		9.7	87.3	3		71.1	2.6	26.3	
PHF	.750	.685	.825	.728	.500	.000	.375	.750	.667	.800	.417	.878	.810	.375	.750	.864

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Bedford Canyon Road
E/W: Georgetown Drive
Weather: Sunny

File Name : CORBCGEPM
Site Code : 9250056
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Bedford Canyon Road Southbound				Private Drive Westbound				Bedford Canyon Road Northbound				Georgetown Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	48	17	65	0	0	1	1	8	27	0	35	14	0	10	24	125
04:15 PM	0	64	21	85	1	0	0	1	7	30	0	37	13	0	5	18	141
04:30 PM	0	49	18	67	0	0	1	1	4	27	0	31	6	0	8	14	113
04:45 PM	0	59	9	68	0	0	0	0	5	32	1	38	5	0	6	11	117
Total	0	220	65	285	1	0	2	3	24	116	1	141	38	0	29	67	496
05:00 PM	2	53	19	74	0	0	0	0	5	29	2	36	7	0	5	12	122
05:15 PM	2	54	19	75	0	0	0	0	9	37	1	47	10	0	7	17	139
05:30 PM	0	54	25	79	0	0	2	2	5	28	3	36	14	0	4	18	135
05:45 PM	3	64	28	95	1	0	0	1	7	32	1	40	11	1	6	18	154
Total	7	225	91	323	1	0	2	3	26	126	7	159	42	1	22	65	550
Grand Total	7	445	156	608	2	0	4	6	50	242	8	300	80	1	51	132	1046
Apprch %	1.2	73.2	25.7		33.3	0	66.7		16.7	80.7	2.7		60.6	0.8	38.6		
Total %	0.7	42.5	14.9	58.1	0.2	0	0.4	0.6	4.8	23.1	0.8 .	28.7	7.6	0.1	4.9	12.6	

	Bedford Canyon Road Southbound				Private Drive Westbound				Bedford Canyon Road Northbound				Georgetown Drive Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	2	53	19	74	0	0	0	0	5	29	2	36	7	0	5	12	122
05:15 PM	2	54	19	75	0	0	0	0	**9**	**37**	1	**47**	10	0	**7**	17	139
05:30 PM	0	54	25	79	0	0	**2**	**2**	5	28	**3**	36	**14**	0	4	**18**	135
05:45 PM	**3**	**64**	**28**	**95**	**1**	0	0	1	7	32	1	40	11	**1**	6	18	**154**
Total Volume	7	225	91	323	1	0	2	3	26	126	7	159	42	1	22	65	550
% App. Total	2.2	69.7	28.2		33.3	0	66.7		16.4	79.2	4.4		64.6	1.5	33.8		
PHF	.583	.879	.813	.850	.250	.000	.250	.375	.722	.851	.583	.846	.750	.250	.786	.903	.893

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25286 Jaclyn Avenue
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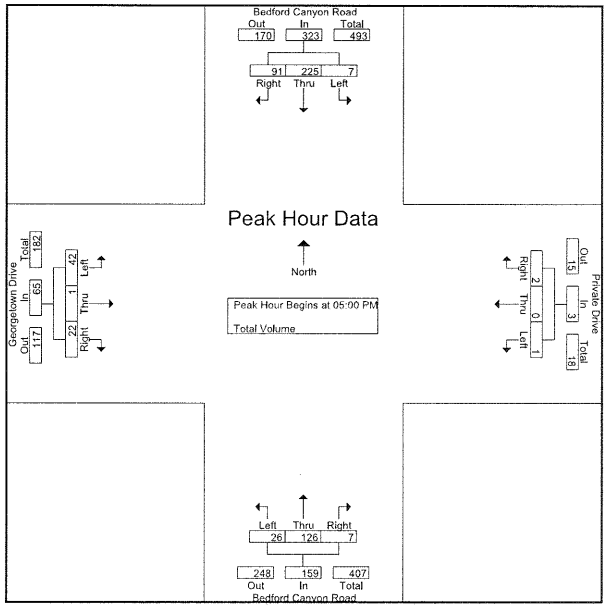
City of Corona
N/S: Bedford Canyon Road
E/W: Georgetown Drive
Weather: Sunny

File Name : CORBCGEPM
Site Code : 9250056
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	2	53	19	74	0	0	**1**	**1**	5	29	2	36	**14**	0	**10**	**24**
+15 mins.	2	54	19	75	**1**	0	0	1	**9**	**37**	1	**47**	13	0	5	18
+30 mins.	0	54	25	79	0	0	1	1	5	28	**3**	36	6	0	8	14
+45 mins.	**3**	**64**	**28**	**95**	0	0	0	0	7	32	1	40	5	0	6	11
Total Volume	7	225	91	323	1	0	2	3	26	126	7	159	38	0	29	67
% App. Total	2.2	69.7	28.2		33.3	0	66.7		16.4	79.2	4.4		56.7	0	43.3	
PHF	.583	.879	.813	.850	.250	.000	.500	.750	.722	.851	.583	.846	.679	.000	.725	.698

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
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City of Corona
N/S: Bedford Canyon Road
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORBCEGAM
Site Code : 9250044
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Bedford Canyon Road Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	28	2	30	39	26	65	14	92	106	201
07:15 AM	27	8	35	61	31	92	7	87	94	221
07:30 AM	40	6	46	40	28	68	9	109	118	232
07:45 AM	30	16	46	60	19	79	7	94	101	226
Total	125	32	157	200	104	304	37	382	419	880
08:00 AM	31	9	40	50	23	73	5	75	80	193
08:15 AM	32	7	39	56	22	78	4	70	74	191
08:30 AM	30	24	54	92	12	104	8	91	99	257
08:45 AM	20	17	37	91	8	99	12	99	111	247
Total	113	57	170	289	65	354	29	335	364	888
Grand Total	238	89	327	489	169	658	66	717	783	1768
Apprch %	72.8	27.2		74.3	25.7		8.4	91.6		
Total %	13.5	5	18.5	27.7	9.6	37.2	3.7	40.6	44.3	

	Bedford Canyon Road Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	31	9	40	50	**23**	73	5	75	80	193
08:15 AM	**32**	7	39	56	22	78	4	70	74	191
08:30 AM	30	**24**	**54**	**92**	12	**104**	8	91	99	**257**
08:45 AM	20	17	37	91	8	99	**12**	**99**	**111**	247
Total Volume	113	57	170	289	65	354	29	335	364	888
% App. Total	66.5	33.5		81.6	18.4		8	92		
PHF	.883	.594	.787	.785	.707	.851	.604	.846	.820	.864

Counts Unlimited Inc.
25286 Jaclyn Avenue
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City of Corona
N/S: Bedford Canyon Road
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORBCEGAM
Site Code : 9250044
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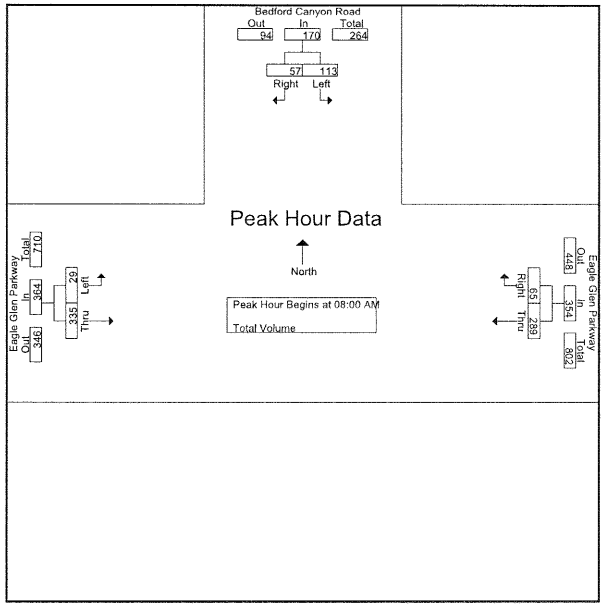

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			07:00 AM		
+0 mins.	30	16	46	50	**23**	73	**14**	92	106
+15 mins.	31	9	40	56	22	78	7	87	94
+30 mins.	**32**	7	39	**92**	12	**104**	9	**109**	**118**
+45 mins.	30	**24**	**54**	91	8	99	7	94	101
Total Volume	123	56	179	289	65	354	37	382	419
% App. Total	68.7	31.3		81.6	18.4		8.8	91.2	
PHF	.961	.583	.829	.785	.707	.851	.661	.876	.888

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Bedford Canyon Road
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORBCEGPM
Site Code : 9250044
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Bedford Canyon Road Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	58	22	80	57	9	66	6	61	67	213
04:15 PM	106	21	127	62	8	70	14	83	97	294
04:30 PM	90	20	110	67	10	77	6	73	79	266
04:45 PM	93	23	116	74	7	81	23	106	129	326
Total	347	86	433	260	34	294	49	323	372	1099
05:00 PM	96	24	120	77	7	84	9	107	116	320
05:15 PM	96	24	120	72	10	82	14	78	92	294
05:30 PM	85	20	105	75	11	86	12	89	101	292
05:45 PM	97	21	118	82	13	95	11	113	124	337
Total	374	89	463	306	41	347	46	387	433	1243
Grand Total	721	175	896	566	75	641	95	710	805	2342
Apprch %	80.5	19.5		88.3	11.7		11.8	88.2		
Total %	30.8	7.5	38.3	24.2	3.2	27.4	4.1	30.3	34.4	

	Bedford Canyon Road Southbound			Eagle Glen Parkway Westbound			Eagle Glen Parkway Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	96	**24**	**120**	77	7	84	9	107	116	320
05:15 PM	96	24	120	72	10	82	**14**	78	92	294
05:30 PM	85	20	105	75	11	86	12	89	101	292
05:45 PM	**97**	21	118	**82**	**13**	**95**	11	**113**	**124**	**337**
Total Volume	374	89	463	306	41	347	46	387	433	1243
% App. Total	80.8	19.2		88.2	11.8		10.6	89.4		
PHF	.964	.927	.965	.933	.788	.913	.821	.856	.873	.922

Counts Unlimited Inc.
25286 Jaclyn Avenue
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(951) 485-7934

City of Corona
N/S: Bedford Canyon Road
E/W: Eagle Glen Parkway
Weather: Sunny

File Name : CORBCEGPM
Site Code : 9250044
Start Date : 9/22/2009
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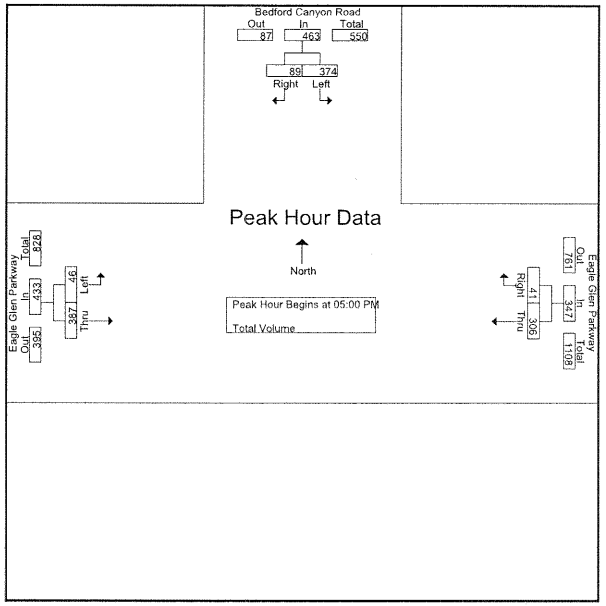

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM			05:00 PM			04:45 PM		
+0 mins.	**106**	21	**127**	77	7	84	**23**	106	**129**
+15 mins.	90	20	110	72	10	82	9	**107**	116
+30 mins.	93	23	116	75	11	86	14	78	92
+45 mins.	96	**24**	120	**82**	**13**	**95**	12	89	101
Total Volume	385	88	473	306	41	347	58	380	438
% App. Total	81.4	18.6		88.2	11.8		13.2	86.8	
PHF	.908	.917	.931	.933	.788	.913	.630	.888	.849

Counts Unlimited Inc.
25286 Jaclyn Avenue
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(951) 485-7934

County of Riverside
N/S: I-15 Southbound Ramps
E/W: El Cerrito Road
Weather: Sunny

File Name : CRV15SECAM
Site Code : 9250028
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				El Cerrito Road Westbound				I-15 Southbound On Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	8	0	60	68	9	142	0	151	0	0	0	0	0	135	40	175	394
07:15 AM	21	2	56	79	21	173	0	194	0	0	0	0	0	155	58	213	486
07:30 AM	43	2	38	83	37	106	0	143	0	0	0	0	0	178	76	254	480
07:45 AM	20	0	34	54	32	83	0	115	0	0	0	0	0	132	56	188	357
Total	92	4	188	284	99	504	0	603	0	0	0	0	0	600	230	830	1717
08:00 AM	8	3	29	40	6	59	0	65	0	0	0	0	0	81	30	111	216
08:15 AM	15	0	31	46	11	57	0	68	0	0	0	0	0	115	30	145	259
08:30 AM	6	0	39	45	18	66	0	84	0	0	0	0	0	88	22	110	239
08:45 AM	5	0	28	33	12	42	0	54	0	0	0	0	0	78	33	111	198
Total	34	3	127	164	47	224	0	271	0	0	0	0	0	362	115	477	912
Grand Total	126	7	315	448	146	728	0	874	0	0	0	0	0	962	345	1307	2629
Apprch %	28.1	1.6	70.3		16.7	83.3	0		0	0	0		0	73.6	26.4		
Total %	4.8	0.3	12	17	5.6	27.7	0	33.2	0	0	0	0	0	36.6	13.1	49.7	

	I-15 Southbound Off Ramp Southbound				El Cerrito Road Westbound				I-15 Southbound On Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	8	0	**60**	68	9	142	0	151	0	0	0	0	0	135	40	175	394
07:15 AM	21	**2**	56	79	21	**173**	0	**194**	0	0	0	0	0	155	58	213	**486**
07:30 AM	**43**	2	38	**83**	**37**	106	0	143	0	0	0	0	0	**178**	**76**	**254**	480
07:45 AM	20	0	34	54	32	83	0	115	0	0	0	0	0	132	56	188	357
Total Volume	92	4	188	284	99	504	0	603	0	0	0	0	0	600	230	830	1717
% App. Total	32.4	1.4	66.2		16.4	83.6	0		0	0	0		0	72.3	27.7		
PHF	.535	.500	.783	.855	.669	.728	.000	.777	.000	.000	.000	.000	.000	.843	.757	.817	.883

Counts Unlimited Inc.
25286 Jaclyn Avenue
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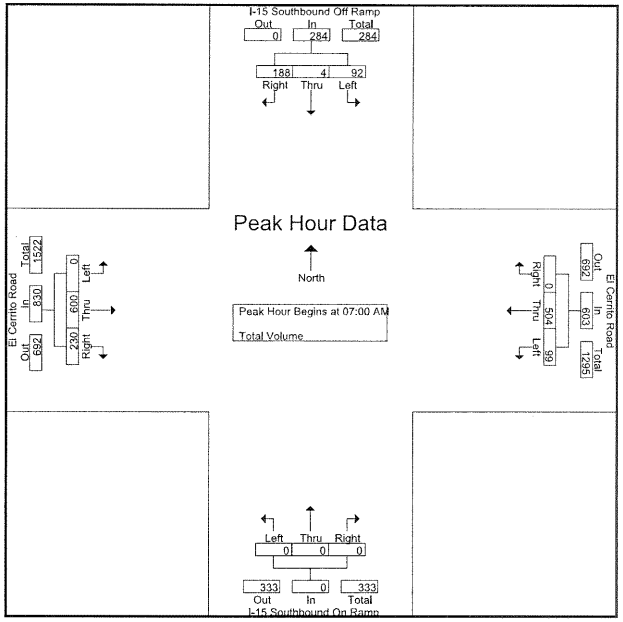
County of Riverside
N/S: I-15 Southbound Ramps
E/W: El Cerrito Road
Weather: Sunny

File Name : CRV15SECAM
Site Code : 9250028
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	8	0	**60**	68	9	142	0	151	0	0	0	0	0	135	40	175
+15 mins.	21	**2**	56	79	21	**173**	0	**194**	0	0	0	0	0	155	58	213
+30 mins.	**43**	2	38	**83**	**37**	106	0	143	0	0	0	0	0	**178**	**76**	**254**
+45 mins.	20	0	34	54	32	83	0	115	0	0	0	0	0	132	56	188
Total Volume	92	4	188	284	99	504	0	603	0	0	0	0	0	600	230	830
% App. Total	32.4	1.4	66.2		16.4	83.6	0		0	0	0		0	72.3	27.7	
PHF	.535	.500	.783	.855	.669	.728	.000	.777	.000	.000	.000	.000	.000	.843	.757	.817

Counts Unlimited Inc.
25286 Jaclyn Avenue
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County of Riverside
N/S: I-15 Southbound Ramps
E/W: El Cerrito Road
Weather: Sunny

File Name : CRV15SECPM
Site Code : 9250028
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	I-15 Southbound Off Ramp Southbound				El Cerrito Road Westbound				I-15 Southbound On Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	24	6	83	113	21	69	0	90	0	0	0	0	0	93	121	214	417
04:15 PM	31	5	50	86	11	57	0	68	0	0	0	0	0	115	115	230	384
04:30 PM	18	5	49	72	8	71	0	79	0	0	0	0	0	90	113	203	354
04:45 PM	29	7	52	88	11	67	0	78	0	0	0	0	0	98	117	215	381
Total	102	23	234	359	51	264	0	315	0	0	0	0	0	396	466	862	1536
05:00 PM	29	3	73	105	9	75	0	84	0	0	0	0	0	95	147	242	431
05:15 PM	31	5	75	111	10	64	0	74	0	0	0	0	0	109	142	251	436
05:30 PM	28	9	75	112	14	74	0	88	0	0	0	0	0	122	135	257	457
05:45 PM	16	5	79	100	10	71	0	81	0	0	0	0	0	115	166	281	462
Total	104	22	302	428	43	284	0	327	0	0	0	0	0	441	590	1031	1786
Grand Total	206	45	536	787	94	548	0	642	0	0	0	0	0	837	1056	1893	3322
Apprch %	26.2	5.7	68.1		14.6	85.4	0		0	0	0		0	44.2	55.8		
Total %	6.2	1.4	16.1	23.7	2.8	16.5	0	19.3	0	0	0	0	0	25.2	31.8	57	

	I-15 Southbound Off Ramp Southbound				El Cerrito Road Westbound				I-15 Southbound On Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	29	3	73	105	9	**75**	0	84	0	0	0	0	0	95	147	242	431
05:15 PM	**31**	5	75	111	10	64	0	74	0	0	0	0	0	109	142	251	436
05:30 PM	28	**9**	75	**112**	**14**	74	0	**88**	0	0	0	0	0	**122**	135	257	457
05:45 PM	16	5	**79**	100	10	71	0	81	0	0	0	0	0	115	**166**	**281**	**462**
Total Volume	104	22	302	428	43	284	0	327	0	0	0	0	0	441	590	1031	1786
% App. Total	24.3	5.1	70.6		13.1	86.9	0		0	0	0		0	42.8	57.2		
PHF	.839	.611	.956	.955	.768	.947	.000	.929	.000	.000	.000	.000	.000	.904	.889	.917	.966

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

County of Riverside
N/S: I-15 Southbound Ramps
E/W: El Cerrito Road
Weather: Sunny

File Name : CRV15SECPM
Site Code : 9250028
Start Date : 9/22/2009
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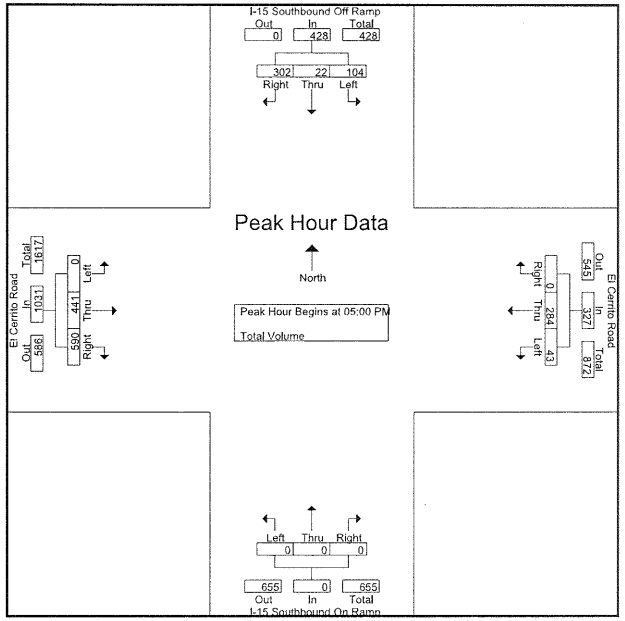

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:00 PM				05:00 PM			
+0 mins.	29	3	73	105	9	**75**	0	84	0	0	0	0	0	95	147	242
+15 mins.	**31**	5	75	111	10	64	0	74	0	0	0	0	0	109	142	251
+30 mins.	28	**9**	75	**112**	**14**	74	0	**88**	0	0	0	0	0	**122**	135	257
+45 mins.	16	5	**79**	100	10	71	0	81	0	0	0	0	0	115	**166**	**281**
Total Volume	104	22	302	428	43	284	0	327	0	0	0	0	0	441	590	1031
% App. Total	24.3	5.1	70.6		13.1	86.9	0		0	0	0		0	42.8	57.2	
PHF	.839	.611	.956	.955	.768	.947	.000	.929	.000	.000	.000	.000	.000	.904	.889	.917

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: I-15 Southbound Ramps
E/W: Cajalco Road
Weather: Sunny

File Name : COR15SCAAM
Site Code : 9250037
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	I-15 Southbound On & Off Ramp Southbound			Cajalco Road Westbound			Cajalco Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	36	20	56	57	6	63	18	83	101	220
07:15 AM	31	27	58	85	15	100	18	87	105	263
07:30 AM	50	29	79	53	17	70	29	111	140	289
07:45 AM	54	58	112	66	23	89	28	96	124	325
Total	171	134	305	261	61	322	93	377	470	1097
08:00 AM	45	41	86	54	18	72	23	85	108	266
08:15 AM	52	43	95	60	24	84	23	81	104	283
08:30 AM	68	59	127	68	9	77	24	95	119	323
08:45 AM	73	59	132	71	11	82	19	79	98	312
Total	238	202	440	253	62	315	89	340	429	1184
Grand Total	409	336	745	514	123	637	182	717	899	2281
Apprch %	54.9	45.1		80.7	19.3		20.2	79.8		
Total %	17.9	14.7	32.7	22.5	5.4	27.9	8	31.4	39.4	

	I-15 Southbound On & Off Ramp Southbound			Cajalco Road Westbound			Cajalco Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	54	58	112	66	23	**89**	**28**	**96**	**124**	**325**
08:00 AM	45	41	86	54	18	72	23	85	108	266
08:15 AM	52	43	95	60	**24**	84	23	81	104	283
08:30 AM	**68**	**59**	**127**	**68**	9	77	24	95	119	323
Total Volume	219	201	420	248	74	322	98	357	455	1197
% App. Total	52.1	47.9		77	23		21.5	78.5		
PHF	.805	.852	.827	.912	.771	.904	.875	.930	.917	.921

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City of Corona
N/S: I-15 Southbound Ramps
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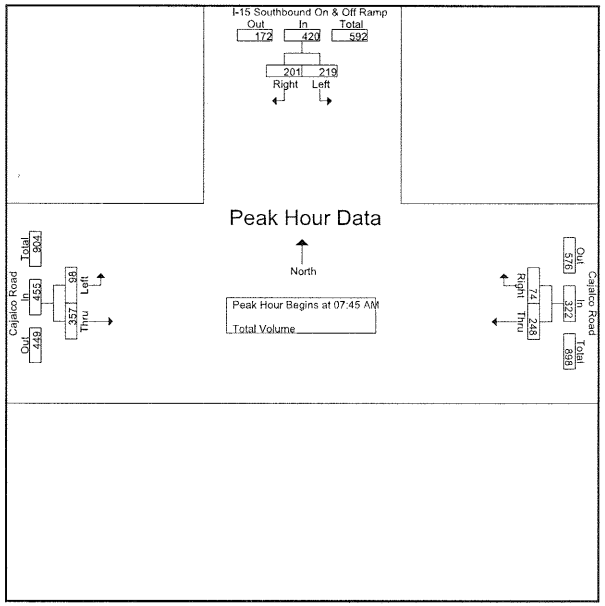
Weather: Sunny

File Name : COR15SCAAM
Site Code : 9250037
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:15 AM			07:15 AM		
+0 mins.	45	41	86	**85**	15	**100**	18	87	105
+15 mins.	52	43	95	53	17	70	**29**	**111**	**140**
+30 mins.	68	**59**	127	66	**23**	89	28	96	124
+45 mins.	**73**	59	**132**	54	18	72	23	85	108
Total Volume	238	202	440	258	73	331	98	379	477
% App. Total	54.1	45.9		77.9	22.1		20.5	79.5	
PHF	.815	.856	.833	.759	.793	.828	.845	.854	.852

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: I-15 Southbound Ramps
E/W: Cajalco Road
Weather: Sunny

File Name : COR15SCAPM
Site Code : 9250037
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	I-15 Southbound On & Off Ramps Southbound			Cajalco Road Westbound			Cajalco Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	70	43	113	62	25	87	38	70	108	308
04:15 PM	77	40	117	75	35	110	61	104	165	392
04:30 PM	91	53	144	77	29	106	59	101	160	410
04:45 PM	90	60	150	101	35	136	75	109	184	470
Total	328	196	524	315	124	439	233	384	617	1580
05:00 PM	100	75	175	79	28	107	76	124	200	482
05:15 PM	94	47	141	90	50	140	59	100	159	440
05:30 PM	101	69	170	98	40	138	56	112	168	476
05:45 PM	110	75	185	75	49	124	72	125	197	506
Total	405	266	671	342	167	509	263	461	724	1904
Grand Total	733	462	1195	657	291	948	496	845	1341	3484
Apprch %	61.3	38.7		69.3	30.7		37	63		
Total %	21	13.3	34.3	18.9	8.4	27.2	14.2	24.3	38.5	

	I-15 Southbound On & Off Ramps Southbound			Cajalco Road Westbound			Cajalco Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	100	**75**	175	79	28	107	**76**	124	**200**	482
05:15 PM	94	47	141	90	**50**	**140**	59	100	159	440
05:30 PM	101	69	170	**98**	40	138	56	112	168	476
05:45 PM	**110**	75	**185**	75	49	124	72	**125**	197	**506**
Total Volume	405	266	671	342	167	509	263	461	724	1904
% App. Total	60.4	39.6		67.2	32.8		36.3	63.7		
PHF	.920	.887	.907	.872	.835	.909	.865	.922	.905	.941

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City of Corona
N/S: I-15 Southbound Ramps
E/W: Cajalco Road
Weather: Sunny

File Name : COR15SCAPM
Site Code : 9250037
Start Date : 9/22/2009
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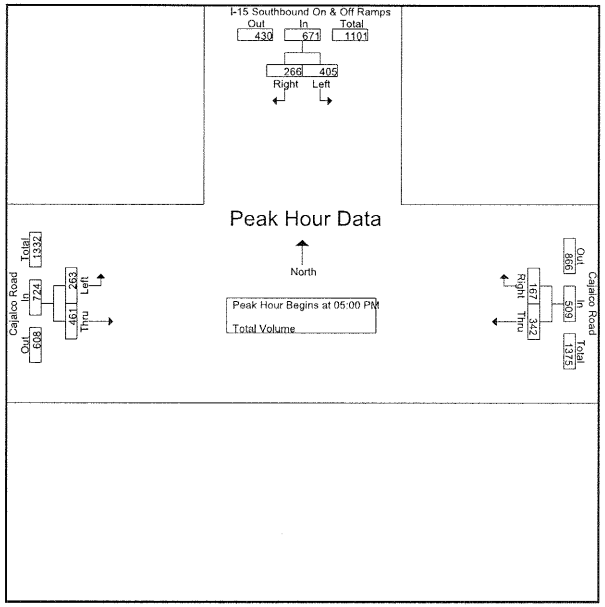

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM			04:45 PM			05:00 PM		
+0 mins.	100	**75**	175	**101**	35	136	**76**	124	**200**
+15 mins.	94	47	141	79	28	107	59	100	159
+30 mins.	101	69	170	90	**50**	**140**	56	112	168
+45 mins.	**110**	75	**185**	98	40	138	72	**125**	197
Total Volume	405	266	671	368	153	521	263	461	724
% App. Total	60.4	39.6		70.6	29.4		36.3	63.7	
PHF	.920	.887	.907	.911	.765	.930	.865	.922	.905

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25286 Jaclyn Avenue
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City of Corona
N/S: I-15 Northbound Ramps
E/W: El Cerrito Road
Weather: Sunny

File Name : CRV15NECAM
Site Code : 9250043
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				El Cerrito Road Westbound				I-15 Northbound Off Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	47	22	69	113	2	9	124	112	31	0	143	336
07:15 AM	0	0	0	0	0	66	42	108	130	3	29	162	122	58	0	180	450
07:30 AM	0	0	0	0	0	79	76	155	63	0	46	109	117	101	0	218	482
07:45 AM	0	0	0	0	0	84	78	162	35	1	21	57	85	60	0	145	364
Total	0	0	0	0	0	276	218	494	341	6	105	452	436	250	0	686	1632
08:00 AM	0	0	0	0	0	17	25	42	41	1	5	47	70	20	0	90	179
08:15 AM	0	0	0	0	0	36	21	57	36	2	21	59	91	40	0	131	247
08:30 AM	0	0	0	0	0	48	15	63	31	0	10	41	75	16	0	91	195
08:45 AM	0	0	0	0	0	21	6	27	29	1	15	45	63	24	0	87	159
Total	0	0	0	0	0	122	67	189	137	4	51	192	299	100	0	399	780
Grand Total	0	0	0	0	0	398	285	683	478	10	156	644	735	350	0	1085	2412
Apprch %	0	0	0		0	58.3	41.7		74.2	1.6	24.2		67.7	32.3	0		
Total %	0	0	0	0	0	16.5	11.8	28.3	19.8	0.4	6.5	26.7	30.5	14.5	0	45	

	I-15 Northbound On Ramp Southbound				El Cerrito Road Westbound				I-15 Northbound Off Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	47	22	69	113	2	9	124	112	31	0	143	336
07:15 AM	0	0	0	0	0	66	42	108	**130**	**3**	29	**162**	**122**	58	0	180	450
07:30 AM	0	0	0	0	0	79	76	155	63	0	**46**	109	117	**101**	0	**218**	**482**
07:45 AM	0	0	0	0	0	**84**	**78**	**162**	35	1	21	57	85	60	0	145	364
Total Volume	0	0	0	0	0	276	218	494	341	6	105	452	436	250	0	686	1632
% App. Total	0	0	0		0	55.9	44.1		75.4	1.3	23.2		63.6	36.4	0		
PHF	.000	.000	.000	.000	.000	.821	.699	.762	.656	.500	.571	.698	.893	.619	.000	.787	.846

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City of Corona
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E/W: El Cerrito Road
Weather: Sunny

File Name : CRV15NECAM
Site Code : 9250043
Start Date : 9/22/2009
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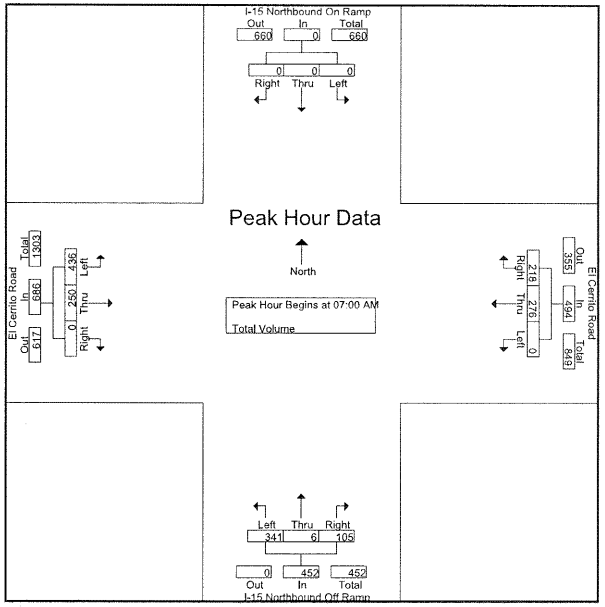

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	47	22	69	113	2	9	124	112	31	0	143
+15 mins.	0	0	0	0	0	66	42	108	**130**	**3**	29	**162**	**122**	58	0	180
+30 mins.	0	0	0	0	0	79	76	155	63	0	**46**	109	117	**101**	0	**218**
+45 mins.	0	0	0	0	0	**84**	**78**	**162**	35	1	21	57	85	60	0	145
Total Volume	0	0	0	0	0	276	218	494	341	6	105	452	436	250	0	686
% App. Total	0	0	0		0	55.9	44.1		75.4	1.3	23.2		63.6	36.4	0	
PHF	.000	.000	.000	.000	.000	.821	.699	.762	.656	.500	.571	.698	.893	.619	.000	.787

Counts Unlimited Inc.
25286 Jaclyn Avenue
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City of Corona
N/S: I-15 Northbound Ramps
E/W: El Cerrito Road
Weather: Sunny

File Name : CRV15NECPM
Site Code : 00000043
Start Date : 9/22/2009
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Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				El Cerrito Road Westbound				I-15 Northbound Off Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	47	16	63	43	1	6	50	55	51	0	106	219
04:15 PM	0	0	0	0	0	30	8	38	38	2	8	48	64	77	0	141	227
04:30 PM	0	0	0	0	0	48	7	55	28	2	4	34	43	64	0	107	196
04:45 PM	0	0	0	0	0	39	11	50	41	0	9	50	45	73	0	118	218
Total	0	0	0	0	0	164	42	206	150	5	27	182	207	265	0	472	860
05:00 PM	0	0	0	0	0	31	10	41	48	1	4	53	54	65	0	119	213
05:15 PM	0	0	0	0	0	32	11	43	41	1	6	48	61	74	0	135	226
05:30 PM	0	0	0	0	0	39	8	47	48	0	2	50	72	74	0	146	243
05:45 PM	0	0	0	0	0	31	3	34	52	4	5	61	61	67	0	128	223
Total	0	0	0	0	0	133	32	165	189	6	17	212	248	280	0	528	905
Grand Total	0	0	0	0	0	297	74	371	339	11	44	394	455	545	0	1000	1765
Apprch %	0	0	0		0	80.1	19.9		86	2.8	11.2		45.5	54.5	0		
Total %	0	0	0	0	0	16.8	4.2	21	19.2	0.6	2.5	22.3	25.8	30.9	0	56.7	

	I-15 Northbound On Ramp Southbound				El Cerrito Road Westbound				I-15 Northbound Off Ramp Northbound				El Cerrito Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	31	10	41	**48**	1	4	53	54	65	0	119	213
05:15 PM	0	0	0	0	0	32	**11**	43	41	1	**6**	48	61	**74**	0	135	226
05:30 PM	0	0	0	0	0	**39**	8	**47**	48	0	2	50	**72**	74	0	**146**	**243**
05:45 PM	0	0	0	0	0	31	3	34	**52**	**4**	5	**61**	61	67	0	128	223
Total Volume	0	0	0	0	0	133	32	165	189	6	17	212	248	280	0	528	905
% App. Total	0	0	0		0	80.6	19.4		89.2	2.8	8		47	53	0		
PHF	.000	.000	.000	.000	.000	.853	.727	.878	.909	.375	.708	.869	.861	.946	.000	.904	.931

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City of Corona
N/S: I-15 Northbound Ramps
E/W: El Cerrito Road
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File Name : CRV15NECPM
Site Code : 00000043
Start Date : 9/22/2009
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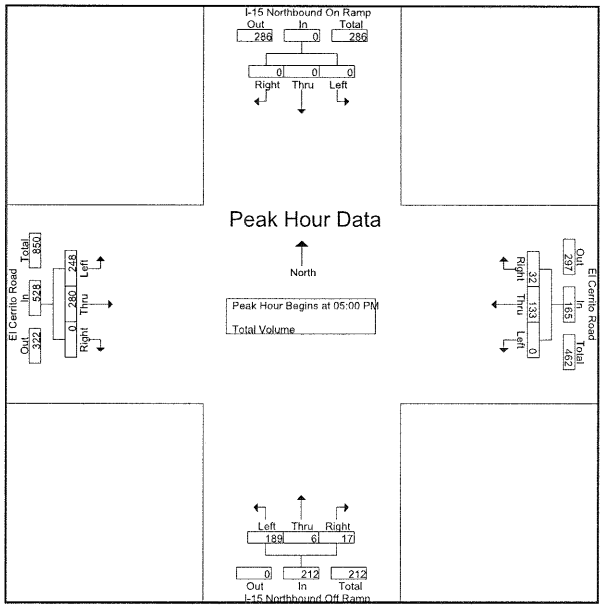

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	47	**16**	**63**	48	1	4	53	54	65	0	119
+15 mins.	0	0	0	0	0	30	8	38	41	1	**6**	48	61	**74**	0	135
+30 mins.	0	0	0	0	0	**48**	7	55	48	0	2	50	**72**	74	0	**146**
+45 mins.	0	0	0	0	0	39	11	50	**52**	**4**	5	**61**	61	67	0	128
Total Volume	0	0	0	0	0	164	42	206	189	6	17	212	248	280	0	528
% App. Total	0	0	0		0	79.6	20.4		89.2	2.8	8		47	53	0	
PHF	.000	.000	.000	.000	.000	.854	.656	.817	.909	.375	.708	.869	.861	.946	.000	.904

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City of Corona
N/S: I-15 Northbound Ramps
E/W: Cajalco Road
Weather: Sunny

File Name : COR15NCAAM
Site Code : 9250017
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	i-15 Northbound On Ramp Southbound				Cajalco Road Westbound				I-15 Northbound Off Ramp Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	46	121	167	31	0	10	41	59	58	0	117	325
07:15 AM	0	0	0	0	0	75	172	247	28	1	17	46	60	54	0	114	407
07:30 AM	0	0	0	0	0	58	186	244	22	0	15	37	96	67	0	163	444
07:45 AM	0	0	0	0	0	65	185	250	20	0	14	34	78	77	0	155	439
Total	0	0	0	0	0	244	664	908	101	1	56	158	293	256	0	549	1615
08:00 AM	0	0	0	0	0	55	138	193	18	0	12	30	68	71	0	139	362
08:15 AM	0	0	0	0	0	63	96	159	27	0	30	57	56	71	0	127	343
08:30 AM	0	0	0	0	0	45	77	122	38	0	18	56	70	92	0	162	340
08:45 AM	0	0	0	0	0	59	76	135	31	0	25	56	70	91	0	161	352
Total	0	0	0	0	0	222	387	609	114	0	85	199	264	325	0	589	1397
Grand Total	0	0	0	0	0	466	1051	1517	215	1	141	357	557	581	0	1138	3012
Apprch %	0	0	0		0	30.7	69.3		60.2	0.3	39.5		48.9	51.1	0		
Total %	0	0	0	0	0	15.5	34.9	50.4	7.1	0	4.7	11.9	18.5	19.3	0	37.8	

	i-15 Northbound On Ramp Southbound				Cajalco Road Westbound				I-15 Northbound Off Ramp Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	**75**	172	247	**28**	**1**	**17**	**46**	60	54	0	114	407
07:30 AM	0	0	0	0	0	58	**186**	244	22	0	15	37	**96**	67	0	**163**	**444**
07:45 AM	0	0	0	0	0	65	185	**250**	20	0	14	34	78	**77**	0	155	439
08:00 AM	0	0	0	0	0	55	138	193	18	0	12	30	68	71	0	139	362
Total Volume	0	0	0	0	0	253	681	934	88	1	58	147	302	269	0	571	1652
% App. Total	0	0	0		0	27.1	72.9		59.9	0.7	39.5		52.9	47.1	0		
PHF	.000	.000	.000	.000	.000	.843	.915	.934	.786	.250	.853	.799	.786	.873	.000	.876	.930

Counts Unlimited Inc.
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City of Corona
N/S: I-15 Northbound Ramps
E/W: Cajalco Road
Weather: Sunny

File Name : COR15NCAAM
Site Code : 9250017
Start Date : 9/22/2009
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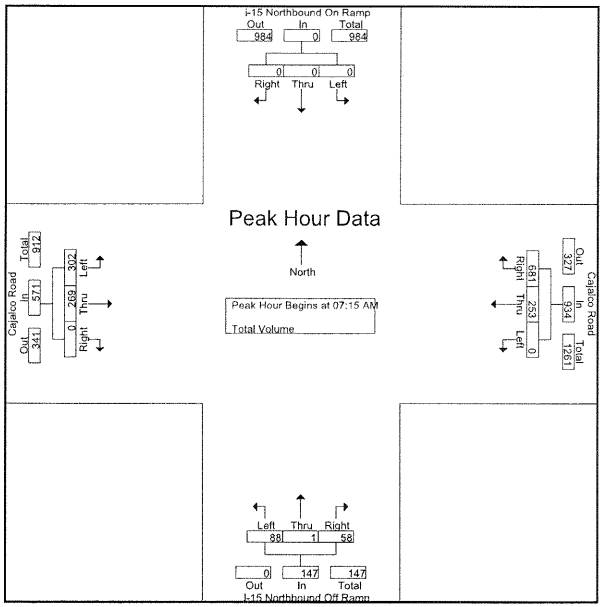

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	**75**	172	247	18	0	12	30	68	71	0	139
+15 mins.	0	0	0	0	0	58	**186**	244	27	0	**30**	**57**	56	71	0	127
+30 mins.	0	0	0	0	0	65	185	**250**	**38**	0	18	56	**70**	**92**	0	162
+45 mins.	0	0	0	0	0	55	138	193	31	0	25	56	70	91	0	161
Total Volume	0	0	0	0	0	253	681	934	114	0	85	199	264	325	0	589
% App. Total	0	0	0		0	27.1	72.9		57.3	0	42.7		44.8	55.2	0	
PHF	.000	.000	.000	.000	.000	.843	.915	.934	.750	.000	.708	.873	.943	.883	.000	.909

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: I-15 Northbound Ramp
E/W: Cajalco Road
Weather: Sunny

File Name : COR15NCAPM
Site Code : 9250017
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	I-15 Northbound On Ramp Southbound				Cajalco Road Westbound				I-15 Northbound Off Ramp Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	83	116	199	33	0	50	83	42	167	0	209	491
04:15 PM	0	0	0	0	0	82	76	158	19	0	36	55	44	151	0	195	408
04:30 PM	0	0	0	0	0	86	87	173	33	0	47	80	48	157	0	205	458
04:45 PM	0	0	0	0	0	101	88	189	32	0	45	77	52	163	0	215	481
Total	0	0	0	0	0	352	367	719	117	0	178	295	186	638	0	824	1838
05:00 PM	0	0	0	0	0	98	96	194	30	0	41	71	51	172	0	223	488
05:15 PM	0	0	0	0	0	109	84	193	34	0	62	96	36	181	0	217	506
05:30 PM	0	0	0	0	0	106	106	212	23	0	49	72	52	176	0	228	512
05:45 PM	0	0	0	0	0	125	88	213	24	0	37	61	51	195	0	246	520
Total	0	0	0	0	0	438	374	812	111	0	189	300	190	724	0	914	2026
Grand Total	0	0	0	0	0	790	741	1531	228	0	367	595	376	1362	0	1738	3864
Apprch %	0	0	0		0	51.6	48.4		38.3	0	61.7		21.6	78.4	0		
Total %	0	0	0	0	0	20.4	19.2	39.6	5.9	0	9.5	15.4	9.7	35.2	0	45	

	I-15 Northbound On Ramp Southbound				Cajalco Road Westbound				I-15 Northbound Off Ramp Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	98	96	194	30	0	41	71	51	172	0	223	488
05:15 PM	0	0	0	0	0	109	84	193	**34**	0	**62**	**96**	36	181	0	217	506
05:30 PM	0	0	0	0	0	106	**106**	212	23	0	49	72	**52**	176	0	228	512
05:45 PM	0	0	0	0	0	**125**	88	**213**	24	0	37	61	51	**195**	0	**246**	520
Total Volume	0	0	0	0	0	438	374	812	111	0	189	300	190	724	0	914	2026
% App. Total	0	0	0		0	53.9	46.1		37	0	63		20.8	79.2	0		
PHF	.000	.000	.000	.000	.000	.876	.882	.953	**.816**	.000	.762	.781	.913	.928	.000	.929	.974

2.1-20

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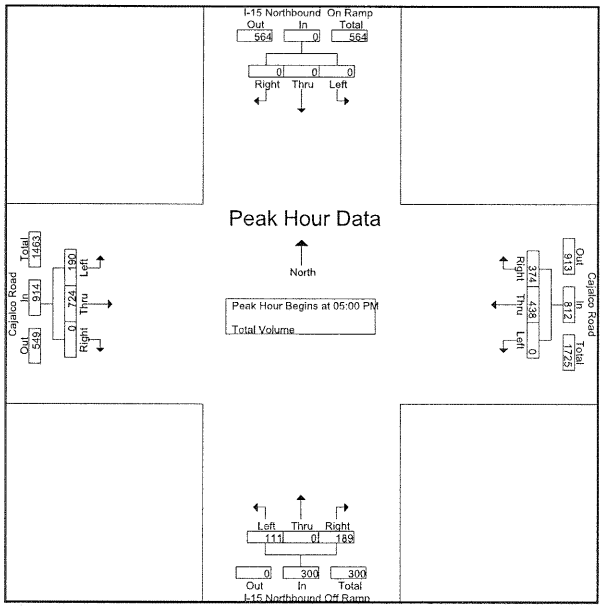
(951) 485-7934

City of Corona
N/S: I-15 Northbound Ramp
E/W: Cajalco Road
Weather: Sunny

File Name : COR15NCAPM
Site Code : 9250017
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:30 PM				05:00 PM			
+0 mins.	0	0	0	0	0	98	96	194	33	0	47	80	51	172	0	223
+15 mins.	0	0	0	0	0	109	84	193	32	0	45	77	36	181	0	217
+30 mins.	0	0	0	0	0	106	**106**	212	30	0	41	71	**52**	176	0	228
+45 mins.	0	0	0	0	0	**125**	88	**213**	**34**	0	**62**	**96**	51	**195**	0	**246**
Total Volume	0	0	0	0	0	438	374	812	129	0	195	324	190	724	0	914
% App. Total	0	0	0		0	53.9	46.1		39.8	0	60.2		20.8	79.2	0	
PHF	.000	.000	.000	.000	.000	.876	.882	.953	.949	.000	.786	.844	.913	.928	.000	.929

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Grand Oaks
E/W: Cajalco Road
Weather: Sunny

File Name : CORGOCAAM
Site Code : 9250137
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Grand Oaks Southbound				Cajalco Road Westbound				Private Drive Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	0	3	5	0	168	10	178	0	0	0	0	23	46	0	69	252
07:15 AM	5	0	11	16	0	213	7	220	0	0	0	0	25	45	0	70	306
07:30 AM	3	0	12	15	1	223	11	235	0	0	0	0	25	57	0	82	332
07:45 AM	7	0	24	31	3	213	19	235	0	0	0	0	32	55	0	87	353
Total	17	0	50	67	4	817	47	868	0	0	0	0	105	203	0	308	1243
08:00 AM	4	0	23	27	1	167	15	183	0	0	0	0	37	51	0	88	298
08:15 AM	6	0	27	33	0	121	16	137	0	0	0	0	25	74	1	100	270
08:30 AM	9	0	23	32	1	97	10	108	0	0	0	0	56	60	0	116	256
08:45 AM	8	0	34	42	0	105	14	119	0	0	0	0	64	52	0	116	277
Total	27	0	107	134	2	490	55	547	0	0	0	0	182	237	1	420	1101
Grand Total	44	0	157	201	6	1307	102	1415	0	0	0	0	287	440	1	728	2344
Apprch %	21.9	0	78.1		0.4	92.4	7.2		0	0	0		39.4	60.4	0.1		
Total %	1.9	0	6.7	8.6	0.3	55.8	4.4	60.4	0	0	0	0	12.2	18.8	0	31.1	

	Grand Oaks Southbound				Cajalco Road Westbound				Private Drive Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	5	0	11	16	0	213	7	220	0	0	0	0	25	45	0	70	306
07:30 AM	3	0	12	15	1	**223**	11	**235**	0	0	0	0	25	**57**	0	82	332
07:45 AM	**7**	0	**24**	**31**	**3**	213	**19**	235	0	0	0	0	32	55	0	87	**353**
08:00 AM	4	0	23	27	1	167	15	183	0	0	0	0	**37**	51	0	**88**	298
Total Volume	19	0	70	89	5	816	52	873	0	0	0	0	119	208	0	327	1289
% App. Total	21.3	0	78.7		0.6	93.5	6		0	0	0		36.4	63.6	0		
PHF	.679	.000	.729	.718	.417	.915	.684	.929	.000	.000	.000	.000	.804	.912	.000	.929	.913

Counts Unlimited Inc.
25286 Jaclyn Avenue
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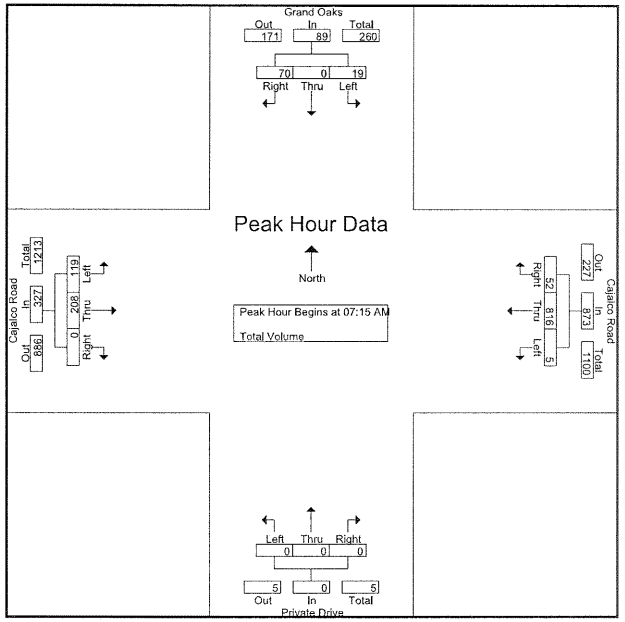
City of Corona
N/S: Grand Oaks
E/W: Cajalco Road
Weather: Sunny

File Name : CORGOCAAM
Site Code : 9250137
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:15 AM				07:00 AM				08:00 AM			
+0 mins.	4	0	23	27	0	213	7	220	0	0	0	0	37	51	0	88
+15 mins.	6	0	27	33	1	**223**	11	**235**	0	0	0	0	25	**74**	1	100
+30 mins.	**9**	0	23	32	**3**	213	**19**	235	0	0	0	0	56	60	0	**116**
+45 mins.	8	0	**34**	**42**	1	167	15	183	0	0	0	0	**64**	52	0	116
Total Volume	27	0	107	134	5	816	52	873	0	0	0	0	182	237	1	420
% App. Total	20.1	0	79.9		0.6	93.5	6		0	0	0		43.3	56.4	0.2	
PHF	.750	.000	.787	.798	.417	.915	.684	.929	.000	.000	.000	.000	.711	.801	.250	.905

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Grand Oaks
E/W: Cajalco Road
Weather: Sunny

File Name : CORGOCAPM
Site Code : 9250137
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

	Southbound				Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	26	0	109	135	0	64	25	89	0	0	0	0	125	84	0	209	433
04:15 PM	26	0	78	104	0	74	25	99	0	0	0	0	103	84	0	187	390
04:30 PM	24	0	100	124	0	77	20	97	0	0	0	0	120	91	0	211	432
04:45 PM	27	0	93	120	0	84	21	105	0	0	0	0	143	74	0	217	442
Total	103	0	380	483	0	299	91	390	0	0	0	0	491	333	0	824	1697
05:00 PM	24	0	96	120	0	76	22	98	0	0	0	0	117	74	0	191	409
05:15 PM	32	0	101	133	0	83	29	112	0	0	0	0	158	85	0	243	488
05:30 PM	26	0	119	145	0	88	22	110	0	0	0	0	135	100	0	235	490
05:45 PM	26	0	121	147	0	85	30	115	0	0	0	0	125	97	0	222	484
Total	108	0	437	545	0	332	103	435	0	0	0	0	535	356	0	891	1871
Grand Total	211	0	817	1028	0	631	194	825	0	0	0	0	1026	689	0	1715	3568
Apprch %	20.5	0	79.5		0	76.5	23.5		0	0	0		59.8	40.2	0		
Total %	5.9	0	22.9	28.8	0	17.7	5.4	23.1	0	0	0	0	28.8	19.3	0	48.1	

	Southbound				Westbound				Northbound				Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	24	0	96	120	0	76	22	98	0	0	0	0	117	74	0	191	409
05:15 PM	**32**	0	101	133	0	83	29	112	0	0	0	0	**158**	85	0	**243**	488
05:30 PM	26	0	119	145	0	**88**	22	110	0	0	0	0	135	**100**	0	235	**490**
05:45 PM	26	0	**121**	**147**	0	85	**30**	**115**	0	0	0	0	125	97	0	222	484
Total Volume	108	0	437	545	0	332	103	435	0	0	0	0	535	356	0	891	1871
% App. Total	19.8	0	80.2		0	76.3	23.7		0	0	0		60	40	0		
PHF	.844	.000	.903	.927	.000	.943	.858	.946	.000	.000	.000	.000	.847	.890	.000	.917	.955

Counts Unlimited Inc.
25286 Jaclyn Avenue
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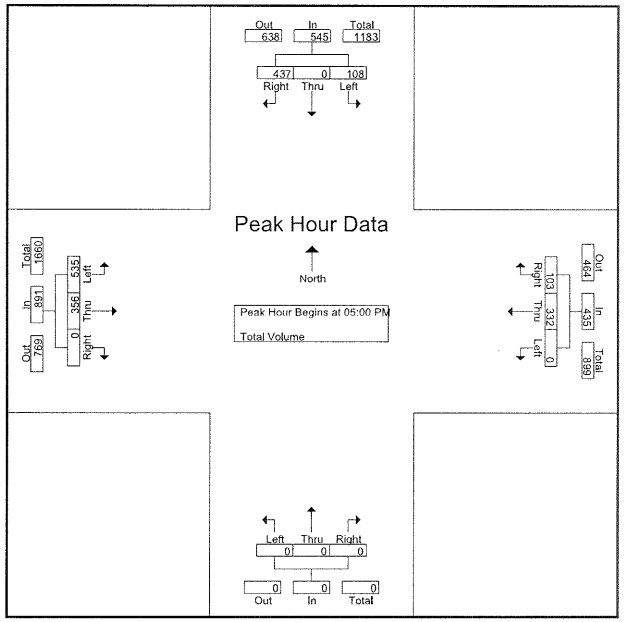
City of Corona
N/S: Grand Oaks
E/W: Cajalco Road
Weather: Sunny

File Name : CORGOCAPM
Site Code : 9250137
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				04:00 PM				05:00 PM			
+0 mins.	24	0	96	120	0	76	22	98	0	0	0	0	117	74	0	191
+15 mins.	**32**	0	101	133	0	83	29	112	0	0	0	0	**158**	85	0	**243**
+30 mins.	26	0	119	145	0	**88**	22	110	0	0	0	0	135	**100**	0	235
+45 mins.	26	0	**121**	**147**	0	85	**30**	**115**	0	0	0	0	125	97	0	222
Total Volume	108	0	437	545	0	332	103	435	0	0	0	0	535	356	0	891
% App. Total	19.8	0	80.2		0	76.3	23.7		0	0	0		60	40	0	
PHF	.844	.000	.903	.927	.000	.943	.858	.946	.000	.000	.000	.000	.847	.890	.000	.917

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Temescal Canyon Road
E/W: Cajalco Road
Weather: Sunny

File Name : CORTCCAAM
Site Code : 9250135
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

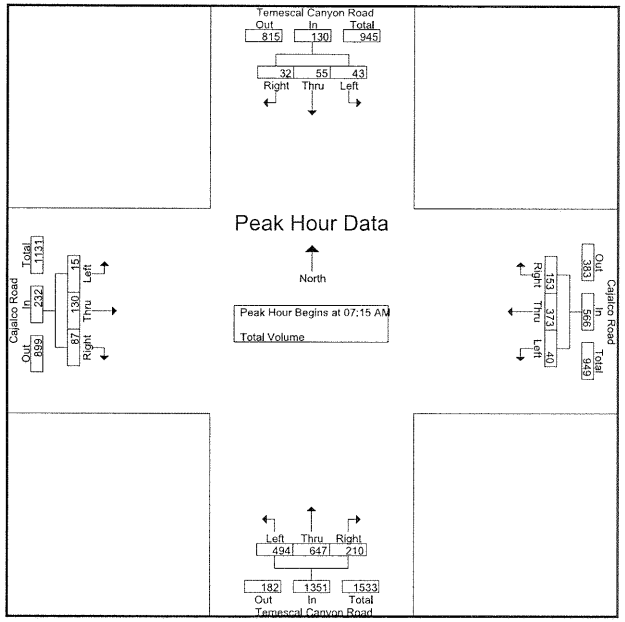
	Temescal Canyon Road Southbound				Cajalco Road Westbound				Temescal Canyon Road Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	9	4	2	15	9	90	48	147	85	119	29	233	3	31	13	47	442
07:15 AM	9	8	4	21	19	90	32	141	110	145	50	305	5	32	13	50	517
07:30 AM	15	9	10	34	8	102	47	157	122	145	36	303	4	41	18	63	557
07:45 AM	12	15	4	31	6	122	39	167	137	161	52	350	2	27	30	59	607
Total	45	36	20	101	42	404	166	612	454	570	167	1191	14	131	74	219	2123
08:00 AM	7	23	14	44	7	59	35	101	125	196	72	393	4	30	26	60	598
08:15 AM	7	12	18	37	10	69	20	99	65	110	26	201	18	34	21	73	410
08:30 AM	12	21	14	47	11	67	30	108	29	41	13	83	12	45	22	79	317
08:45 AM	13	15	7	35	9	74	33	116	38	41	16	95	10	29	29	68	314
Total	39	71	53	163	37	269	118	424	257	388	127	772	44	138	98	280	1639
Grand Total	84	107	73	264	79	673	284	1036	711	958	294	1963	58	269	172	499	3762
Apprch %	31.8	40.5	27.7		7.6	65	27.4		36.2	48.8	15		11.6	53.9	34.5		
Total %	2.2	2.8	1.9	7	2.1	17.9	7.5	27.5	18.9	25.5	7.8	52.2	1.5	7.2	4.6	13.3	

	Temescal Canyon Road Southbound				Cajalco Road Westbound				Temescal Canyon Road Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	8	4	21	**19**	90	32	141	110	145	50	305	**5**	32	13	50	517
07:30 AM	**15**	9	10	34	8	102	**47**	157	122	145	36	303	4	**41**	18	**63**	557
07:45 AM	12	15	4	31	6	**122**	39	**167**	**137**	161	52	350	2	27	**30**	59	**607**
08:00 AM	7	**23**	**14**	**44**	7	59	35	101	125	**196**	**72**	**393**	4	30	26	60	598
Total Volume	43	55	32	130	40	373	153	566	494	647	210	1351	15	130	87	232	2279
% App. Total	33.1	42.3	24.6		7.1	65.9	27		36.6	47.9	15.5		6.5	56	37.5		
PHF	.717	.598	.571	.739	.526	.764	.814	.847	.901	.825	.729	.859	.750	.793	.725	.921	.939

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Temescal Canyon Road
E/W: Cajalco Road
Weather: Sunny

File Name : CORTCCAAM
Site Code : 9250135
Start Date : 9/22/2009
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:00 AM				07:15 AM				08:00 AM			
+0 mins.	7	**23**	14	44	9	90	**48**	147	110	145	50	305	4	30	26	60
+15 mins.	7	12	**18**	37	**19**	90	32	141	122	145	36	303	**18**	34	21	73
+30 mins.	12	21	14	**47**	8	102	47	157	**137**	161	52	350	12	**45**	22	**79**
+45 mins.	**13**	15	7	35	6	**122**	39	**167**	125	**196**	**72**	**393**	10	29	**29**	68
Total Volume	39	71	53	163	42	404	166	612	494	647	210	1351	44	138	98	280
% App. Total	23.9	43.6	32.5		6.9	66	27.1		36.6	47.9	15.5		15.7	49.3	35	
PHF	.750	.772	.736	.867	.553	.828	.865	.916	.901	.825	.729	.859	.611	.767	.845	.886

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

City of Corona
N/S: Temescal Canyon Road
E/W: Cajalco Road
Weather: Sunny

File Name : CORTCCAPM
Site Code : 9250135
Start Date : 9/22/2009
Page No : 1

Groups Printed- Total Volume

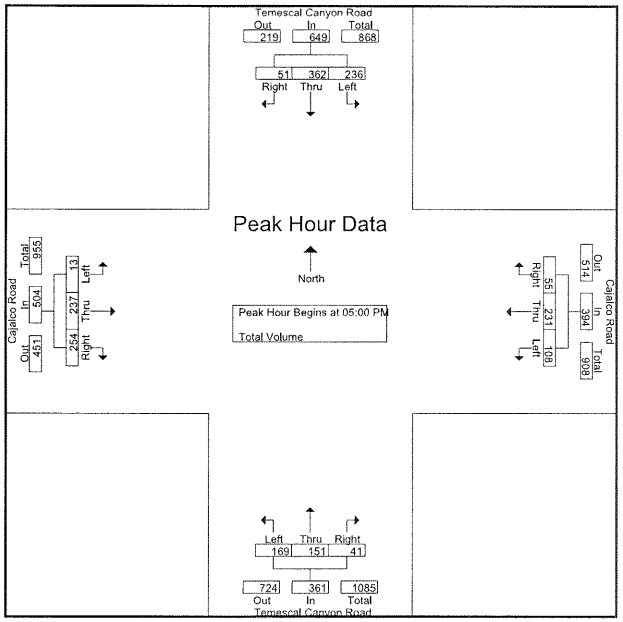
	Temescal Canyon Road Southbound				Cajalco Road Westbound				Temescal Canyon Road Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	55	74	9	138	13	56	13	82	31	23	19	73	3	65	56	124	417
04:15 PM	48	85	16	149	9	44	22	75	41	42	24	107	5	56	49	110	441
04:30 PM	63	103	20	186	22	40	33	95	41	36	16	93	6	69	42	117	491
04:45 PM	57	100	11	168	14	59	18	91	41	30	9	80	0	65	40	105	444
Total	223	362	56	641	58	199	86	343	154	131	68	353	14	255	187	456	1793
05:00 PM	55	81	11	147	19	53	13	85	39	39	15	93	2	54	59	115	440
05:15 PM	70	88	7	165	25	63	13	101	46	48	7	101	1	62	63	126	493
05:30 PM	52	98	11	161	28	63	19	110	45	38	5	88	7	51	61	119	478
05:45 PM	59	95	22	176	36	52	10	98	39	26	14	79	3	70	71	144	497
Total	236	362	51	649	108	231	55	394	169	151	41	361	13	237	254	504	1908
Grand Total	459	724	107	1290	166	430	141	737	323	282	109	714	27	492	441	960	3701
Apprch %	35.6	56.1	8.3		22.5	58.3	19.1		45.2	39.5	15.3		2.8	51.2	45.9		
Total %	12.4	19.6	2.9	34.9	4.5	11.6	3.8	19.9	8.7	7.6	2.9	19.3	0.7	13.3	11.9	25.9	

	Temescal Canyon Road Southbound				Cajalco Road Westbound				Temescal Canyon Road Northbound				Cajalco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	55	81	11	147	19	53	13	85	39	39	**15**	93	2	54	59	115	440
05:15 PM	**70**	88	7	165	25	**63**	13	101	**46**	**48**	7	**101**	1	62	63	126	493
05:30 PM	52	**98**	11	161	28	63	**19**	**110**	45	38	5	88	**7**	51	61	119	478
05:45 PM	59	95	**22**	**176**	**36**	52	10	98	39	26	14	79	3	**70**	**71**	**144**	**497**
Total Volume	236	362	51	649	108	231	55	394	169	151	41	361	13	237	254	504	1908
% App. Total	36.4	55.8	7.9		27.4	58.6	14		46.8	41.8	11.4		2.6	47	50.4		
PHF	.843	.923	.580	.922	.750	.917	.724	.895	.918	.786	.683	.894	.464	.846	.894	.875	.960

Counts Unlimited Inc.
25286 Jaclyn Avenue
Moreno Valley, CA 92557
(951) 485-7934

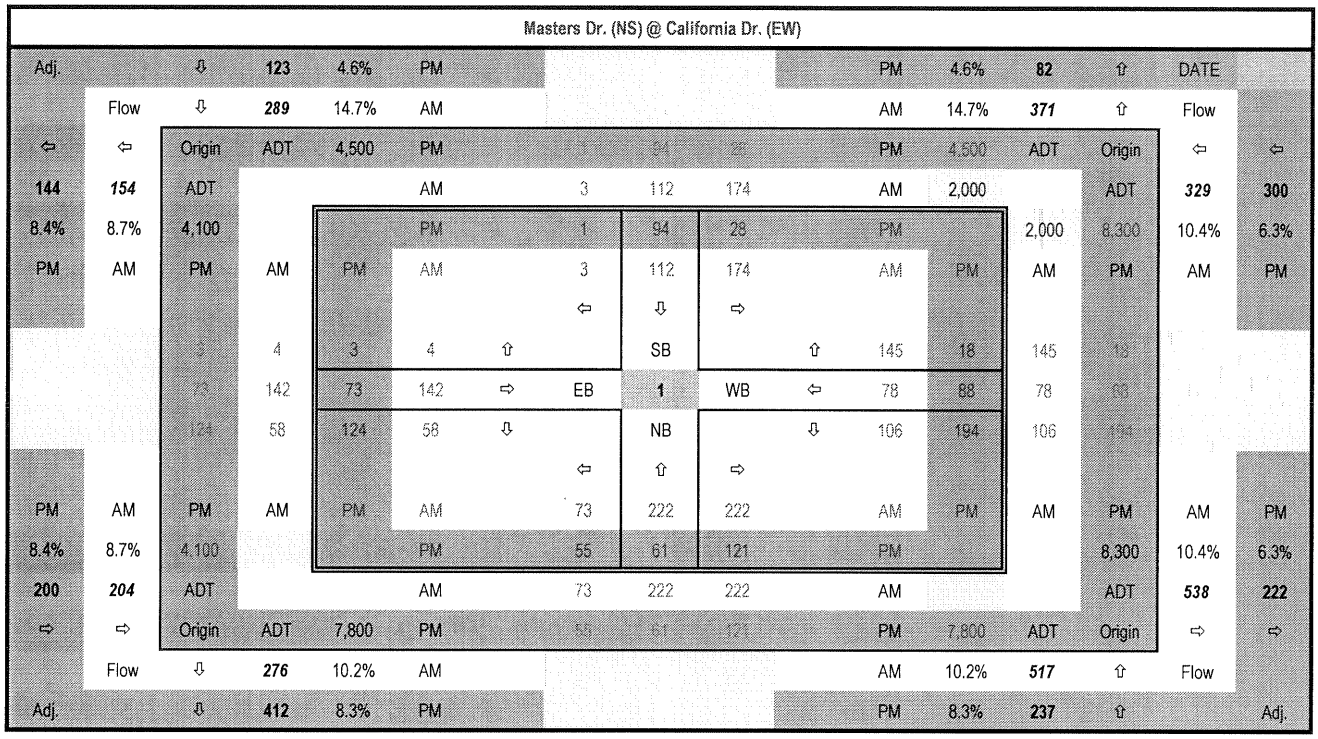
City of Corona
N/S: Temescal Canyon Road
E/W: Cajalco Road
Weather: Sunny

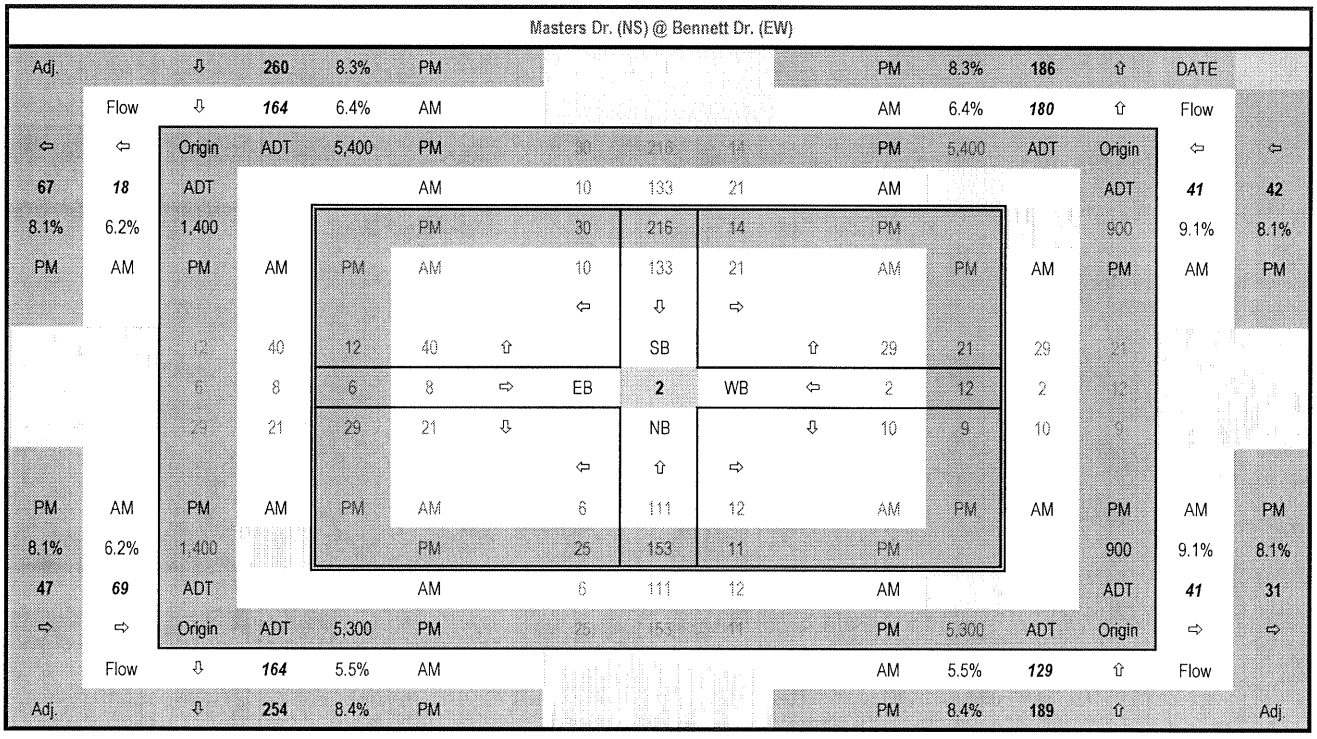
File Name : CORTCCAPM
Site Code : 9250135
Start Date : 9/22/2009
Page No : 2

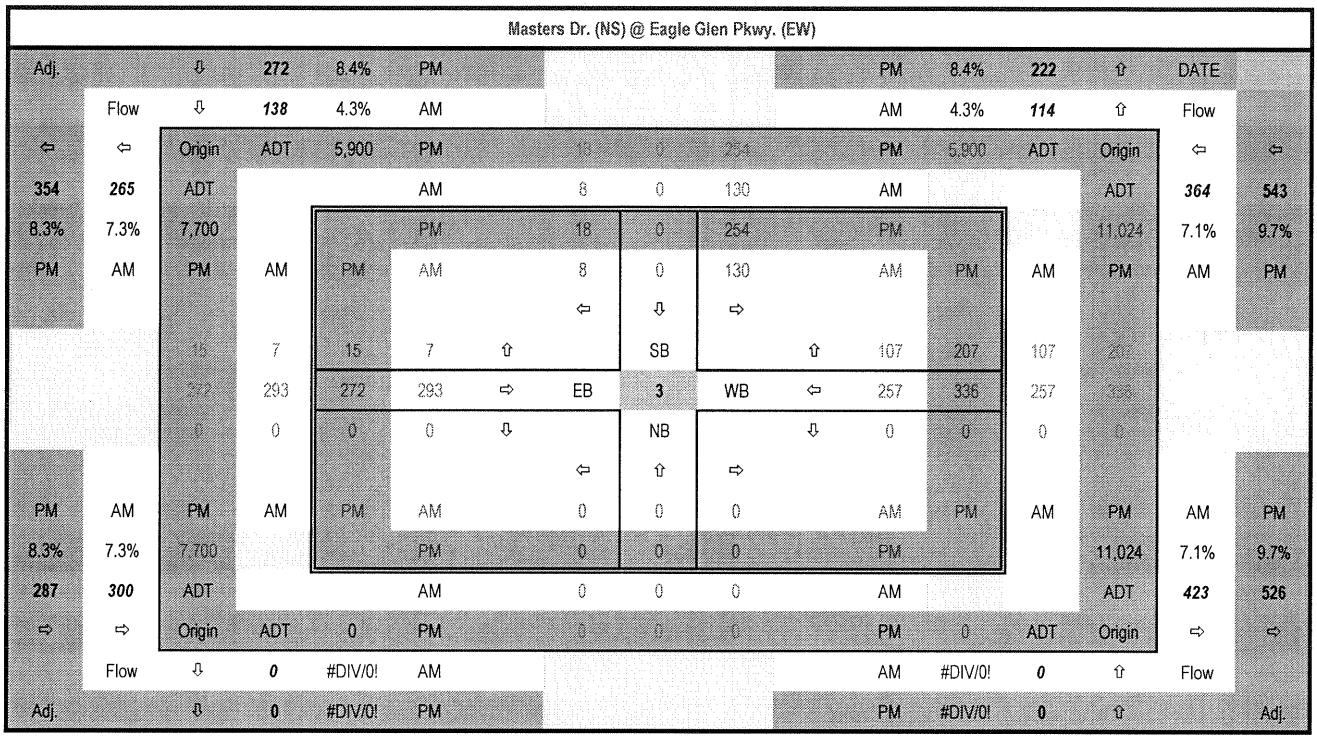


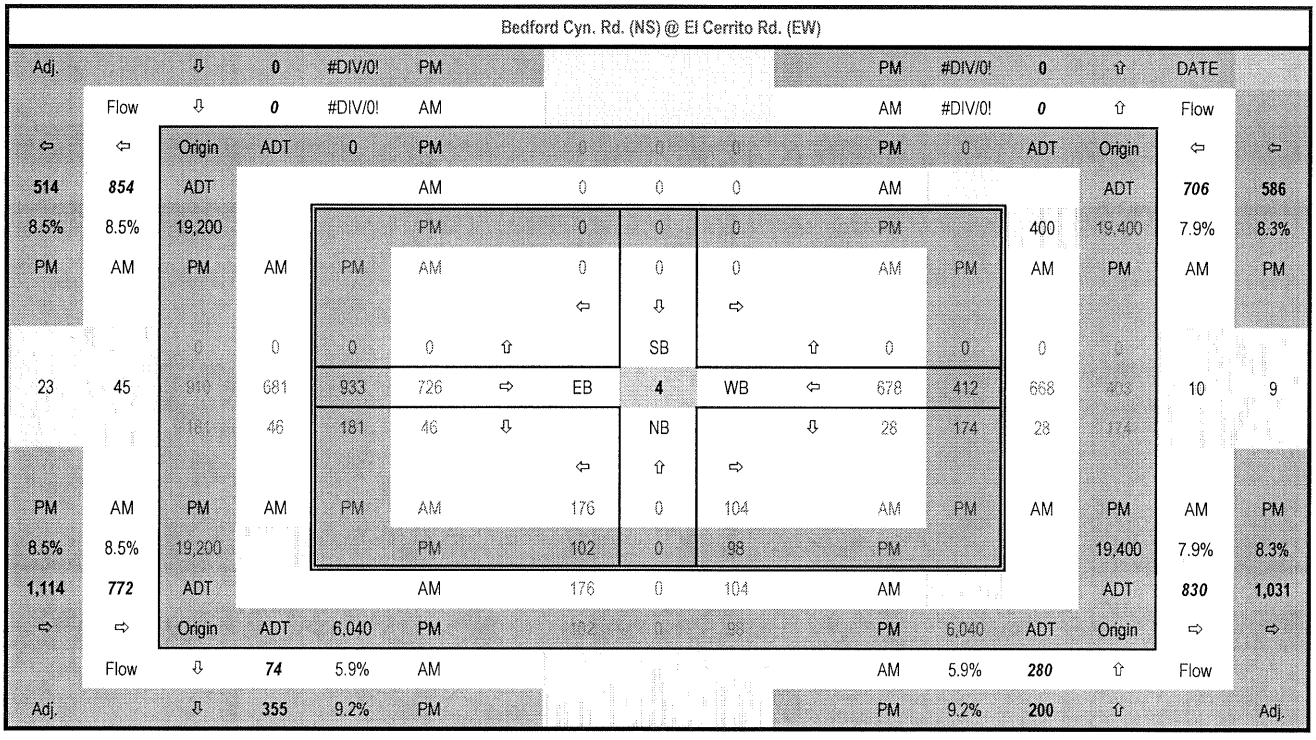
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

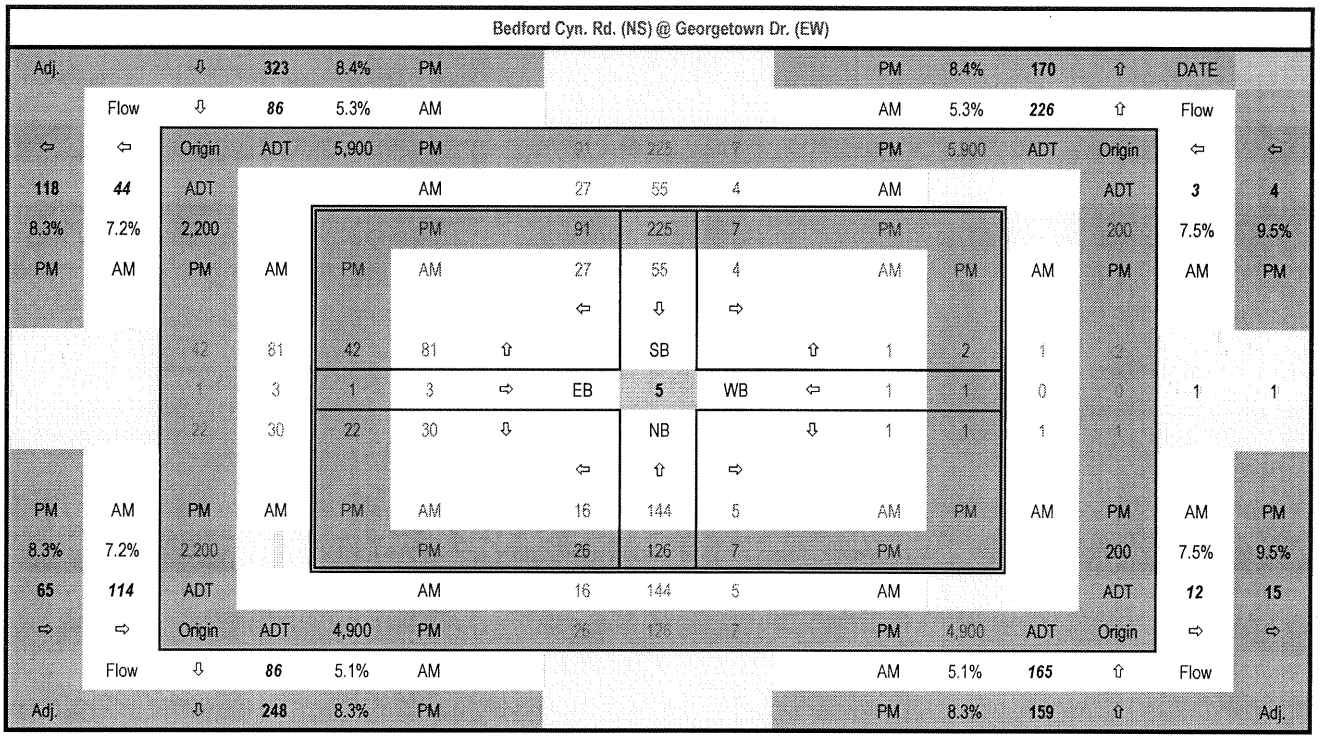
	04:30 PM				05:00 PM				04:15 PM				05:00 PM			
+0 mins.	63	**103**	**20**	**186**	19	53	13	85	**41**	**42**	**24**	**107**	2	54	59	115
+15 mins.	57	100	11	168	25	**63**	13	101	41	36	16	93	1	62	63	126
+30 mins.	55	81	11	147	28	63	**19**	**110**	41	30	9	80	7	51	61	119
+45 mins.	**70**	88	7	165	**36**	52	10	98	39	39	15	93	3	**70**	**71**	**144**
Total Volume	245	372	49	666	108	231	55	394	162	147	64	373	13	237	254	504
% App. Total	36.8	55.9	7.4		27.4	58.6	14		43.4	39.4	17.2		2.6	47	50.4	
PHF	.875	.903	.613	.895	.750	.917	.724	.895	.988	.875	.667	.871	.464	.846	.894	.875

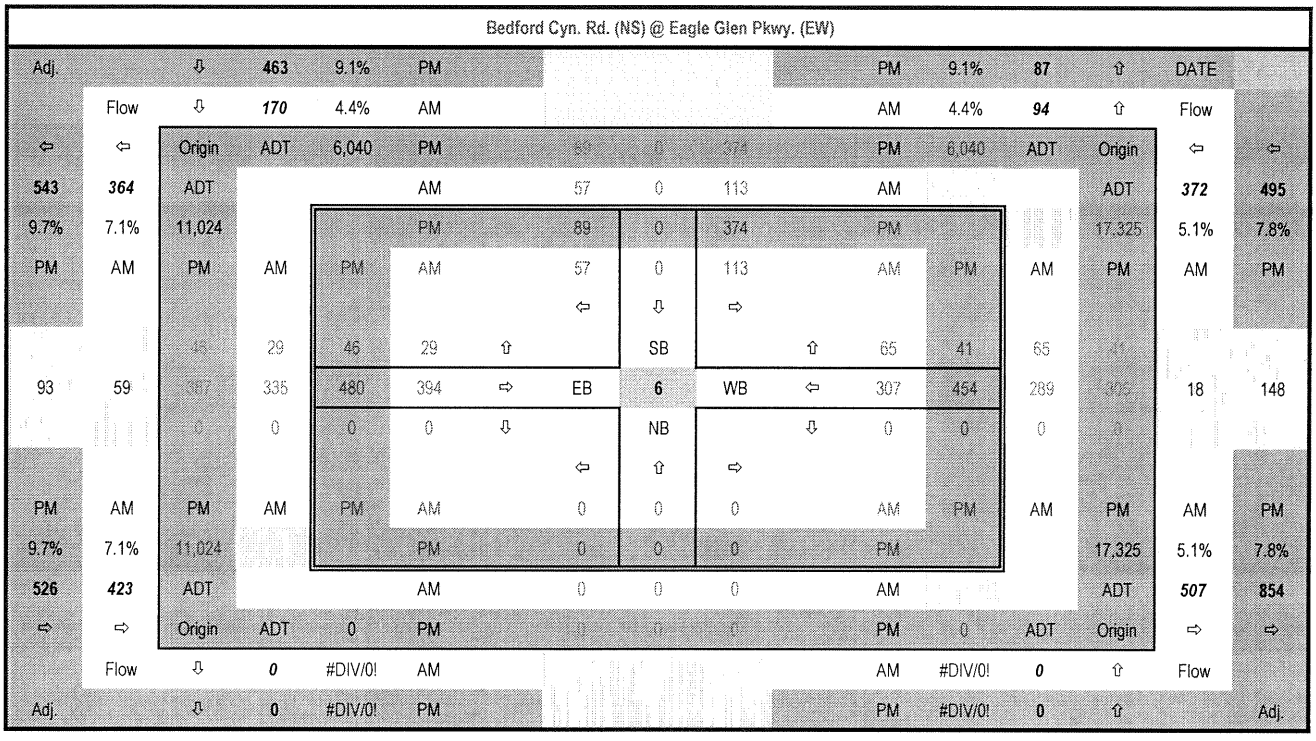

Masters Dr. (NS) @ California Dr. (EW)
Adj. ⇩ 123 4.6% PM PM 4.6% 82 ⇧ DATE
Flow ⇩ 289 14.7% AM AM 14.7% 371 ⇧ Flow
⇦ ⇦ Origin ADT 4,500 PM PM 4,500 ADT Origin ⇦ ⇦
144 154 ADT AM 3 112 174 AM 2,000 ADT 329 300
8.4% 8.7% 4,100 PM 1 94 28 PM 2,000 8,300 10.4% 6.3%
PM AM PM AM PM AM 3 112 174 AM PM AM PM AM PM
⇦ ⇩ ⇨
5 4 3 4 ⇧ SB ⇧ 145 18 145 18
23 142 73 142 ⇨ EB 1 WB ⇦ 78 88 78 88
124 58 124 58 ⇩ NB ⇩ 106 194 106 194
⇦ ⇧ ⇨
PM AM PM AM PM AM 73 222 222 AM PM AM PM AM PM
8.4% 8.7% 4,100 PM 55 61 121 PM 8,300 10.4% 6.3%
200 204 ADT AM 73 222 222 AM ADT 538 222
⇨ ⇨ Origin ADT 7,800 PM 55 61 121 PM 7,800 ADT Origin ⇨ ⇨
Flow ⇩ 276 10.2% AM AM 10.2% 517 ⇧ Flow
Adj. ⇩ 412 8.3% PM PM 8.3% 237 ⇧ Adj.

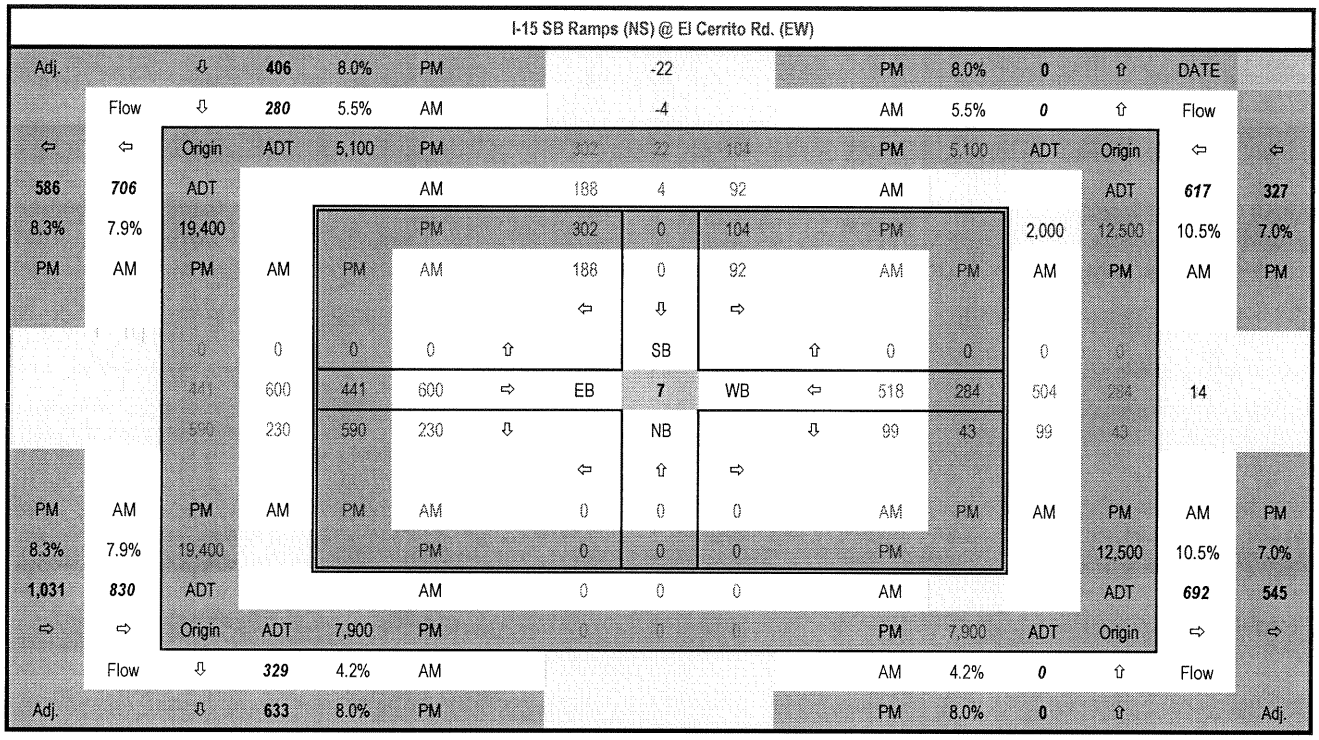

Masters Dr. (NS) @ Bennett Dr. (EW)
Adj. ⇩ 260 8.3% PM PM 8.3% 186 ⇧ DATE
Flow ⇩ 164 6.4% AM AM 6.4% 180 ⇧ Flow
⇦ ⇦ Origin ADT 5,400 PM PM 5,400 ADT Origin ⇦ ⇦
67 18 ADT AM 10 133 21 AM ADT 41 42
8.1% 6.2% 1,400 PM 30 216 14 PM 900 9.1% 8.1%
PM AM PM AM PM AM 10 133 21 AM PM AM PM AM PM
⇦ ⇩ ⇨
12 40 12 40 ⇧ SB ⇧ 29 21 29 21
6 8 6 8 ⇨ EB 2 WB ⇦ 2 12 2 12
29 21 29 21 ⇩ NB ⇩ 10 9 10 9
⇦ ⇧ ⇨
PM AM PM AM PM AM 6 111 12 AM PM AM PM AM PM
8.1% 6.2% 1,400 PM 25 153 11 PM 900 9.1% 8.1%
47 69 ADT AM 6 111 12 AM ADT 41 31
⇨ ⇨ Origin ADT 5,300 PM 25 153 11 PM 5,300 ADT Origin ⇨ ⇨
Flow ⇩ 164 5.5% AM AM 5.5% 129 ⇧ Flow
Adj. ⇩ 254 8.4% PM PM 8.4% 189 ⇧ Adj.

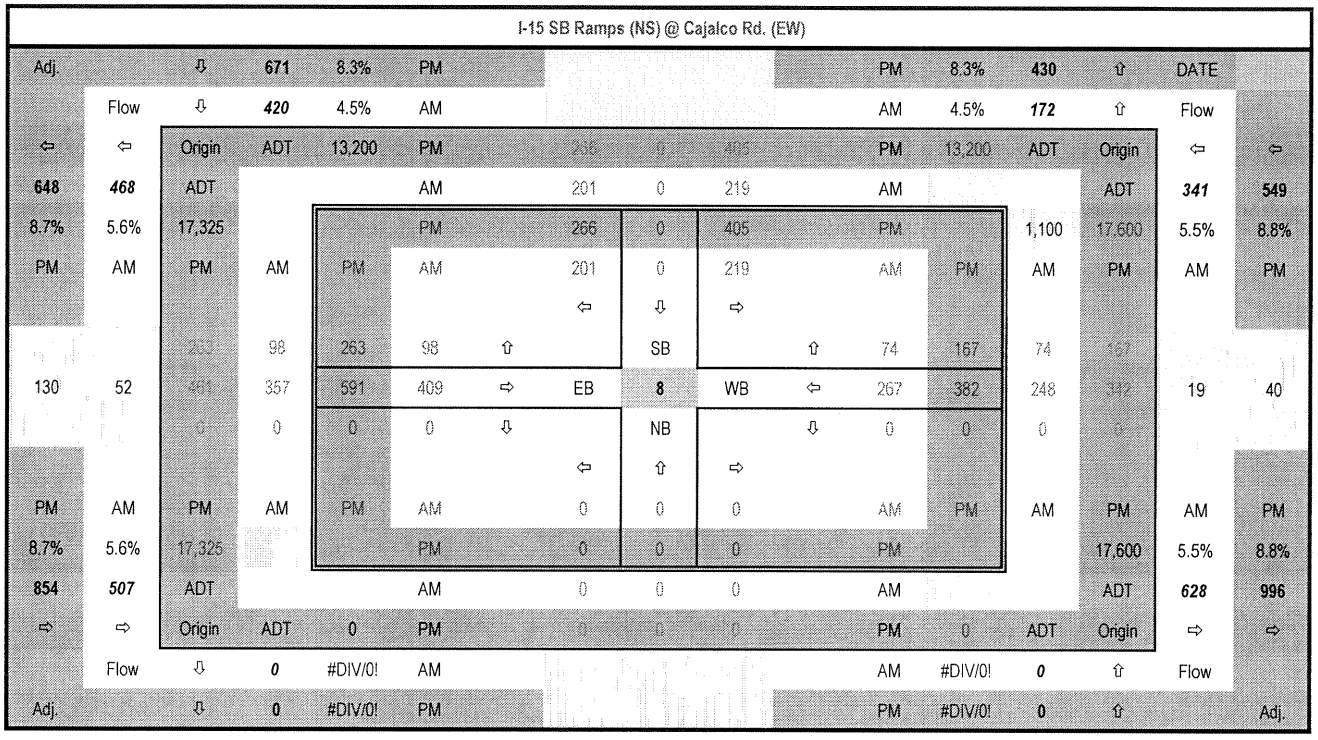

Masters Dr. (NS) @ Eagle Glen Pkwy. (EW)
Adj. ⇩ 272 8.4% PM PM 8.4% 222 ⇧ DATE
Flow ⇩ 138 4.3% AM AM 4.3% 114 ⇧ Flow
⇦ ⇦ Origin ADT 5,900 PM PM 5,900 ADT Origin ⇦ ⇦
354 265 ADT AM AM ADT 364 543
8.3% 7.3% 7,700 PM 18 0 254 PM 11,024 7.1% 9.7%
PM AM PM AM PM AM 8 0 130 AM PM AM PM AM PM
⇦ ⇩ ⇨
15 7 15 7 ⇧ SB ⇧ 107 207 107 207
272 293 272 293 ⇨ EB 3 WB ⇦ 257 336 257 336
0 0 0 0 ⇩ NB ⇩ 0 0 0 0
⇦ ⇧ ⇨
PM AM PM AM PM AM 0 0 0 AM PM AM PM AM PM
8.3% 7.3% 7,700 PM 0 0 0 PM 11,024 7.1% 9.7%
287 300 ADT AM 0 0 0 AM ADT 423 526
⇨ ⇨ Origin ADT 0 PM 0 0 0 PM 0 ADT Origin ⇨ ⇨
Flow ⇩ 0 #DIV/0! AM AM #DIV/0! 0 ⇧ Flow
Adj. ⇩ 0 #DIV/0! PM PM #DIV/0! 0 ⇧ Adj.

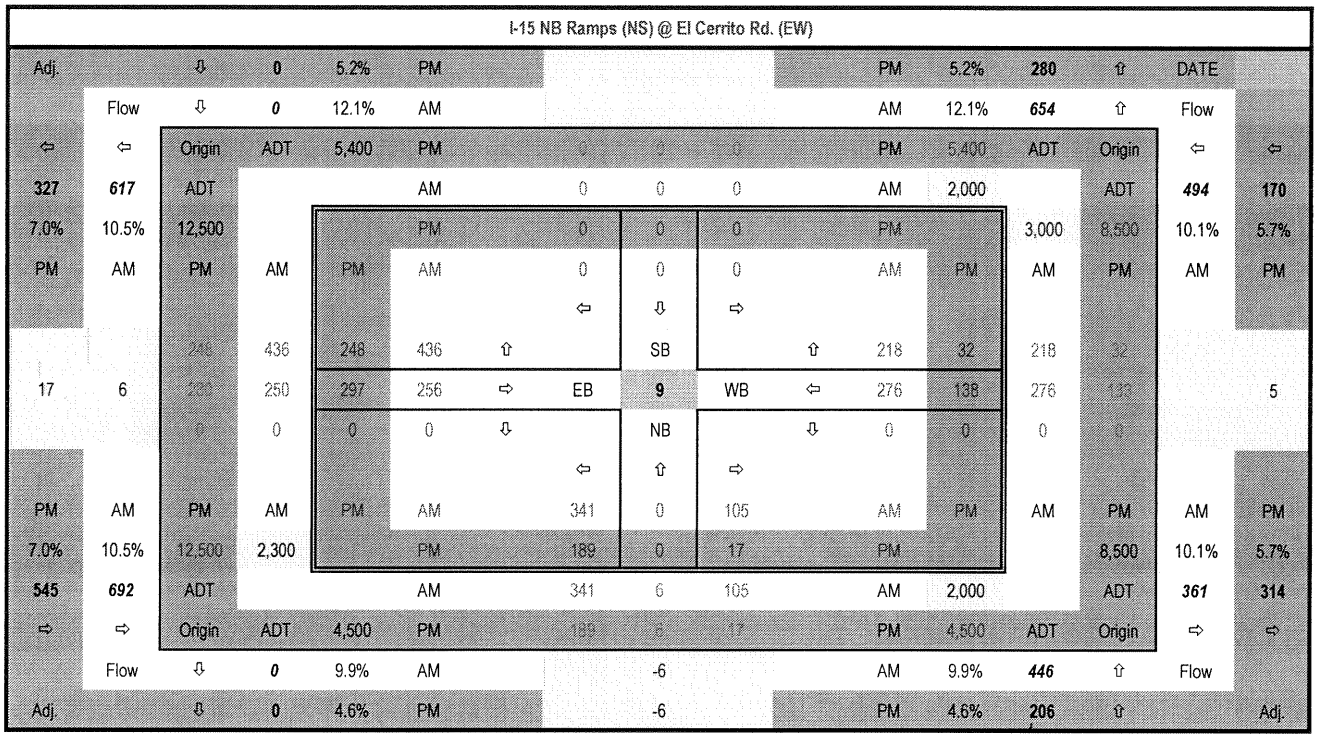

Bedford Cyn. Rd. (NS) @ El Cerrito Rd. (EW)
Adj. ⇩ 0 #DIV/0! PM PM #DIV/0! 0 ⇧ DATE
Flow ⇩ 0 #DIV/0! AM AM #DIV/0! 0 ⇧ Flow
⇦ ⇦ Origin ADT 0 PM 0 0 0 PM 0 ADT Origin ⇦ ⇦
514 854 ADT AM 0 0 0 AM ADT 706 586
8.5% 8.5% 19,200 PM 0 0 0 PM 400 19,400 7.9% 8.3%
PM AM PM AM PM AM 0 0 0 AM PM AM PM AM PM
⇦ ⇩ ⇨
0 0 0 0 ⇧ SB ⇧ 0 0 0 0
23 45 933 681 933 726 ⇨ EB 4 WB ⇦ 678 412 668 413 10 9
181 46 181 46 ⇩ NB ⇩ 28 174 28 174
⇦ ⇧ ⇨
PM AM PM AM PM AM 176 0 104 AM PM AM PM AM PM
8.5% 8.5% 19,200 PM 102 0 98 PM 19,400 7.9% 8.3%
1,114 772 ADT AM 176 0 104 AM ADT 830 1,031
⇨ ⇨ Origin ADT 6,040 PM 102 0 98 PM 6,040 ADT Origin ⇨ ⇨
Flow ⇩ 74 5.9% AM AM 5.9% 280 ⇧ Flow
Adj. ⇩ 355 9.2% PM PM 9.2% 200 ⇧ Adj.

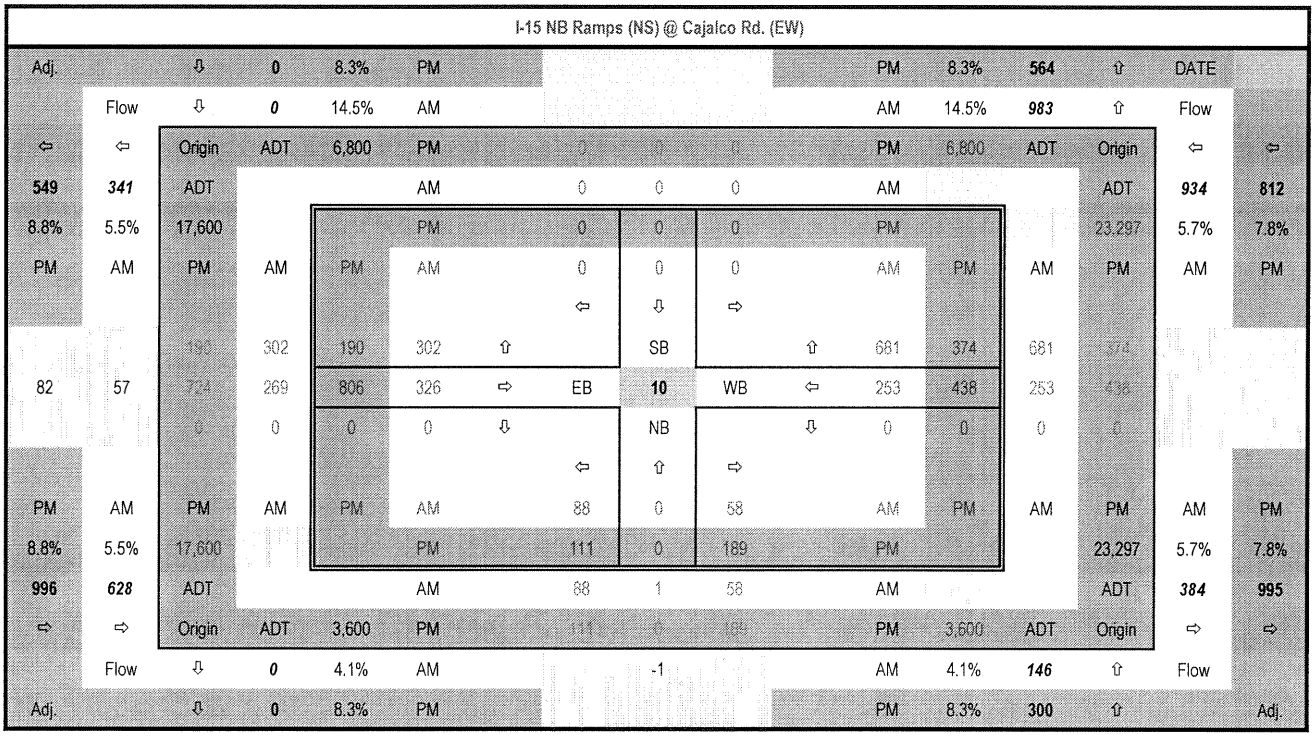

Bedford Cyn. Rd. (NS) @ Georgetown Dr. (EW)
Adj. ⇩ 323 8.4% PM PM 8.4% 170 ⇧ DATE
Flow ⇩ 86 5.3% AM AM 5.3% 226 ⇧ Flow
⇦ ⇦ Origin ADT 5,900 PM PM 5,900 ADT Origin ⇦ ⇦
118 44 ADT AM AM ADT 3 4
8.3% 7.2% 2,200 PM PM 200 7.5% 9.5%
PM AM PM AM PM AM PM AM PM AM PM AM PM
⇦ ⇩ ⇨
42 81 42 81 ⇧ SB ⇧ 1 2 1 2
1 3 1 3 ⇨ EB 5 WB ⇦ 1 1 0 0 1 1
22 30 22 30 ⇩ NB ⇩ 1 1 1 1
⇦ ⇧ ⇨
PM AM PM AM PM AM PM AM PM AM PM AM PM
8.3% 7.2% 2,200 PM PM 200 7.5% 9.5%
65 114 ADT AM AM ADT 12 15
⇨ ⇨ Origin ADT 4,900 PM PM 4,900 ADT Origin ⇨ ⇨
Flow ⇩ 86 5.1% AM AM 5.1% 165 ⇧ Flow
Adj. ⇩ 248 8.3% PM PM 8.3% 159 ⇧ Adj.

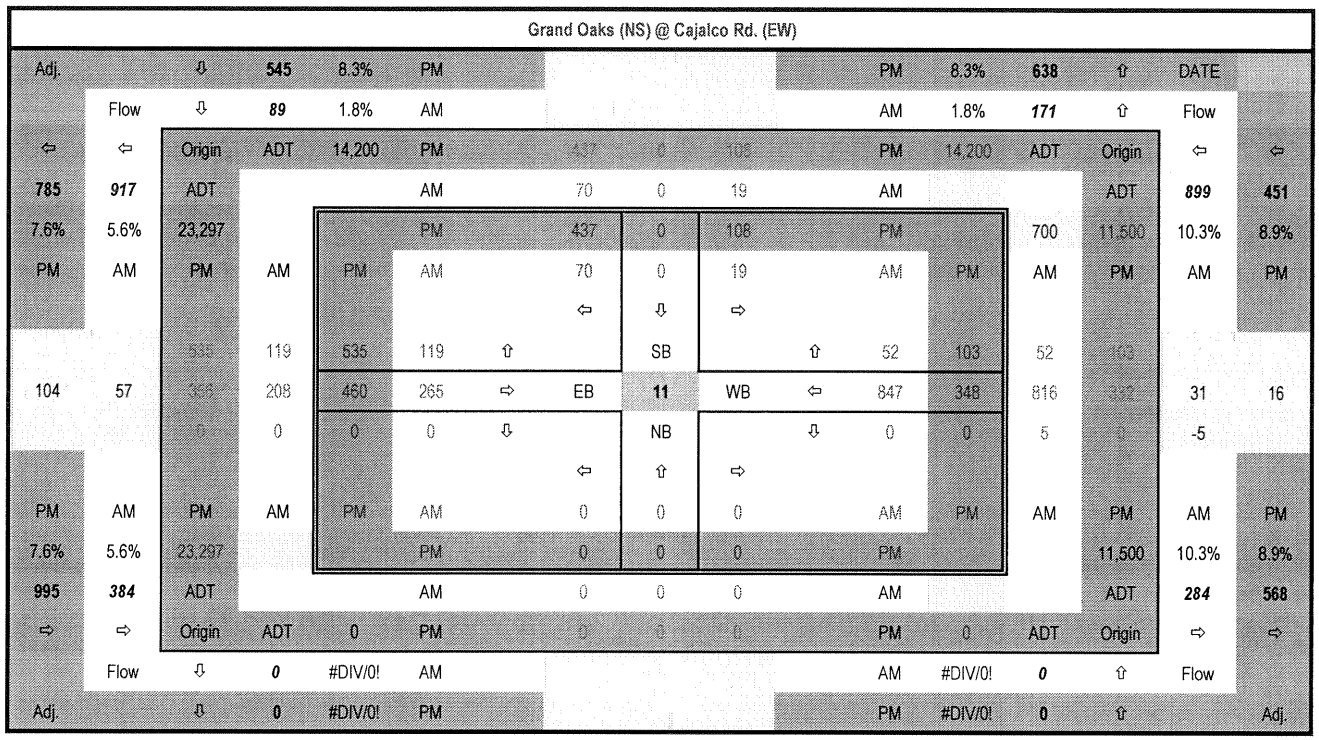

Bedford Cyn. Rd. (NS) @ Eagle Glen Pkwy. (EW)
Adj. ⇩ 463 9.1% PM PM 9.1% 87 ⇧ DATE
Flow ⇩ 170 4.4% AM AM 4.4% 94 ⇧ Flow
⇦ ⇦ Origin ADT 6,040 PM PM 6,040 ADT Origin ⇦ ⇦
543 364 ADT AM AM ADT 372 495
9.7% 7.1% 11,024 PM PM 17,325 5.1% 7.8%
PM AM PM AM PM AM PM AM PM AM PM AM PM
⇦ ⇩ ⇨
46 29 46 29 ⇧ SB ⇧ 65 41 65 41
93 59 387 335 480 394 ⇨ EB 6 WB ⇦ 307 454 289 405 18 148
0 0 0 0 ⇩ NB ⇩ 0 0 0 0
⇦ ⇧ ⇨
PM AM PM AM PM AM PM AM PM AM PM AM PM
9.7% 7.1% 11,024 PM PM 17,325 5.1% 7.8%
526 423 ADT AM AM ADT 507 854
⇨ ⇨ Origin ADT 0 PM PM 0 ADT Origin ⇨ ⇨
Flow ⇩ 0 #DIV/0! AM AM #DIV/0! 0 ⇧ Flow
Adj. ⇩ 0 #DIV/0! PM PM #DIV/0! 0 ⇧ Adj.

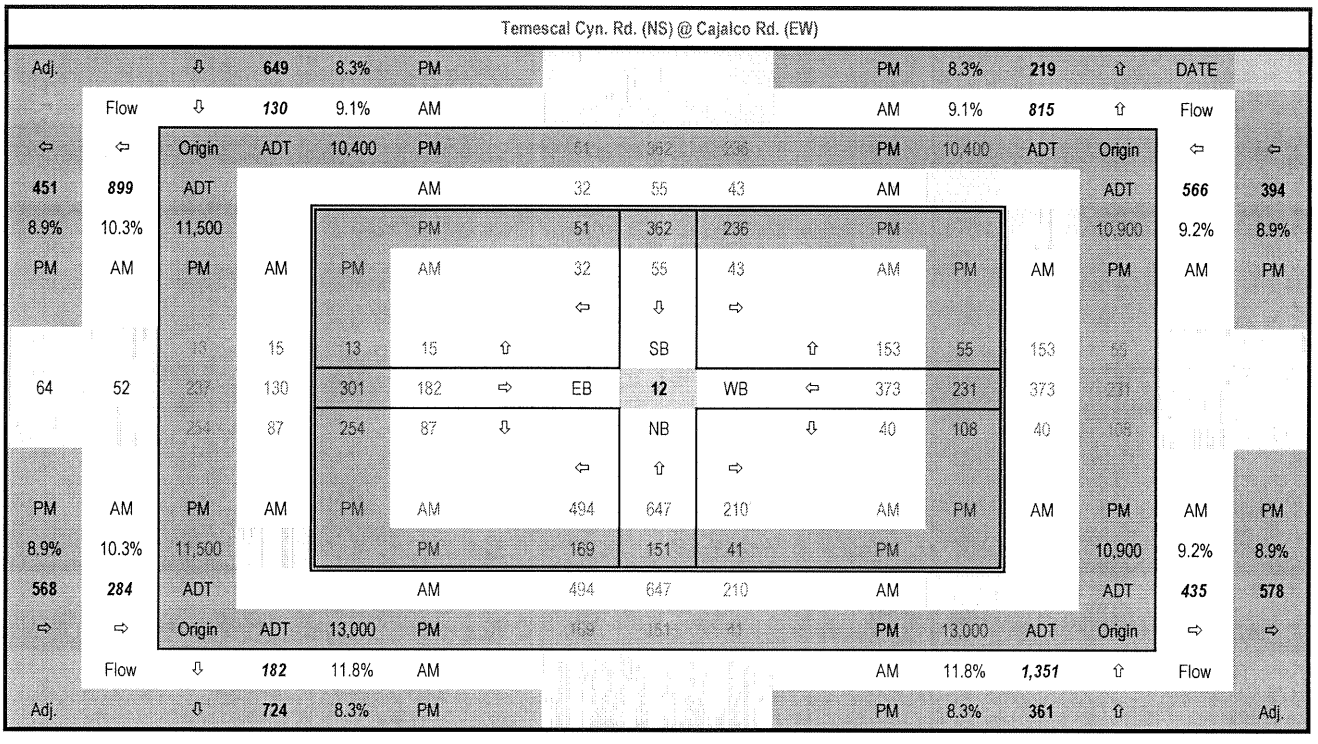

I-15 SB Ramps (NS) @ El Cerrito Rd. (EW)
Adj. ⇩ 406 8.0% PM -22 PM 8.0% 0 ⇧ DATE
Flow ⇩ 280 5.5% AM -4 AM 5.5% 0 ⇧ Flow
⇦ ⇦ Origin ADT 5,100 PM 302 22 104 PM 5,100 ADT Origin ⇦ ⇦
586 706 ADT AM 188 4 92 AM ADT 617 327
8.3% 7.9% 19,400 PM 302 0 104 PM 2,000 12,500 10.5% 7.0%
PM AM PM AM PM AM 188 0 92 AM PM AM PM AM PM
⇦ ⇩ ⇨
0 0 0 0 ⇧ SB ⇧ 0 0 0 0
441 600 441 600 ⇨ EB 7 WB ⇦ 518 284 504 284 14
590 230 590 230 ⇩ NB ⇩ 99 43 99 43
⇦ ⇧ ⇨
PM AM PM AM PM AM 0 0 0 AM PM AM PM AM PM
8.3% 7.9% 19,400 PM 0 0 0 PM 12,500 10.5% 7.0%
1,031 830 ADT AM 0 0 0 AM ADT 692 545
⇨ ⇨ Origin ADT 7,900 PM 0 0 0 PM 7,900 ADT Origin ⇨ ⇨
Flow ⇩ 329 4.2% AM AM 4.2% 0 ⇧ Flow
Adj. ⇩ 633 8.0% PM PM 8.0% 0 ⇧ Adj.

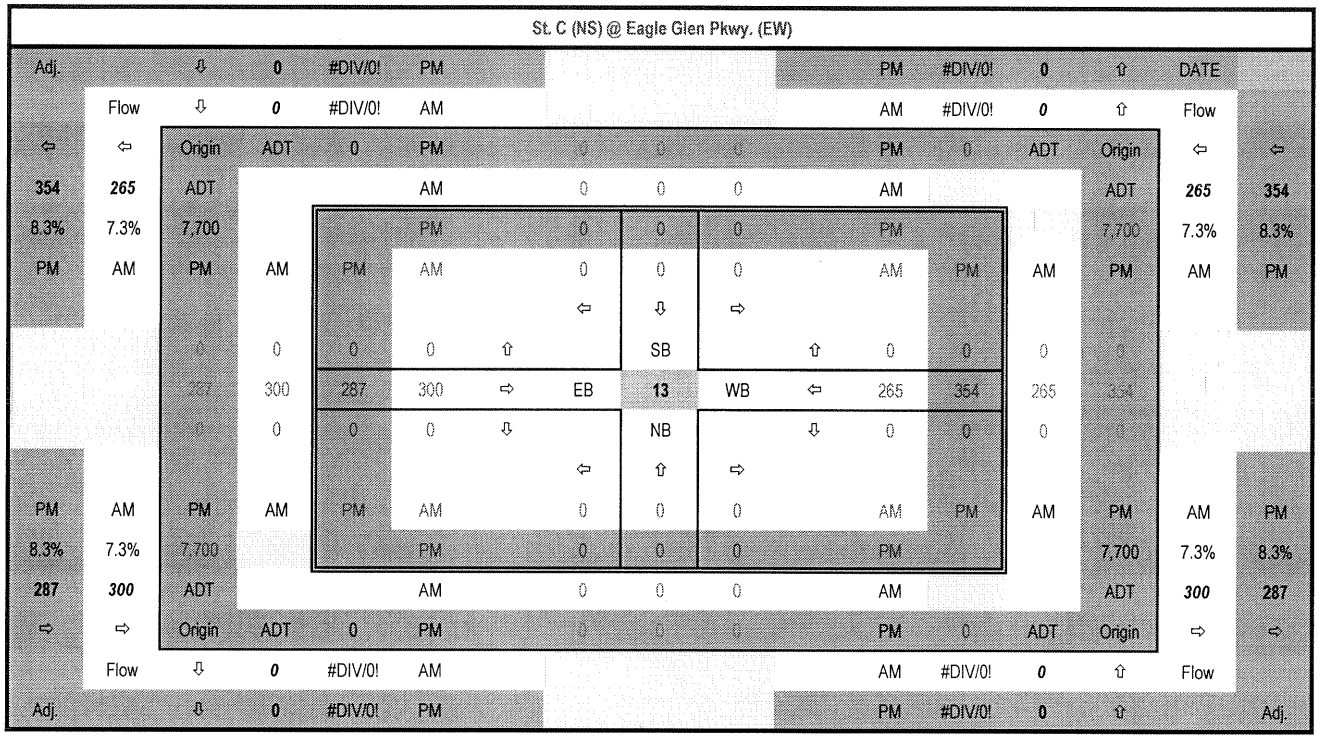

I-15 SB Ramps (NS) @ Cajalco Rd. (EW)
Adj. ⇩ 671 8.3% PM PM 8.3% 430 ⇧ DATE
Flow ⇩ 420 4.5% AM AM 4.5% 172 ⇧ Flow
⇦ ⇦ Origin ADT 13,200 PM 266 0 405 PM 13,200 ADT Origin ⇦ ⇦
648 468 ADT AM 201 0 219 AM ADT 341 549
8.7% 5.6% 17,325 PM 266 0 405 PM 1,100 17,600 5.5% 8.8%
PM AM PM AM PM AM 201 0 219 AM PM AM PM AM PM
⇦ ⇩ ⇨
263 98 263 98 ⇧ SB ⇧ 74 167 74 167
130 52 461 357 591 409 ⇨ EB 8 WB ⇦ 267 382 248 412 19 40
0 0 0 0 ⇩ NB ⇩ 0 0 0 0
⇦ ⇧ ⇨
PM AM PM AM PM AM 0 0 0 AM PM AM PM AM PM
8.7% 5.6% 17,325 PM 0 0 0 PM 17,600 5.5% 8.8%
854 507 ADT AM 0 0 0 AM ADT 628 996
⇨ ⇨ Origin ADT 0 PM 0 0 0 PM 0 ADT Origin ⇨ ⇨
Flow ⇩ 0 #DIV/0! AM AM #DIV/0! 0 ⇧ Flow
Adj. ⇩ 0 #DIV/0! PM PM #DIV/0! 0 ⇧ Adj.

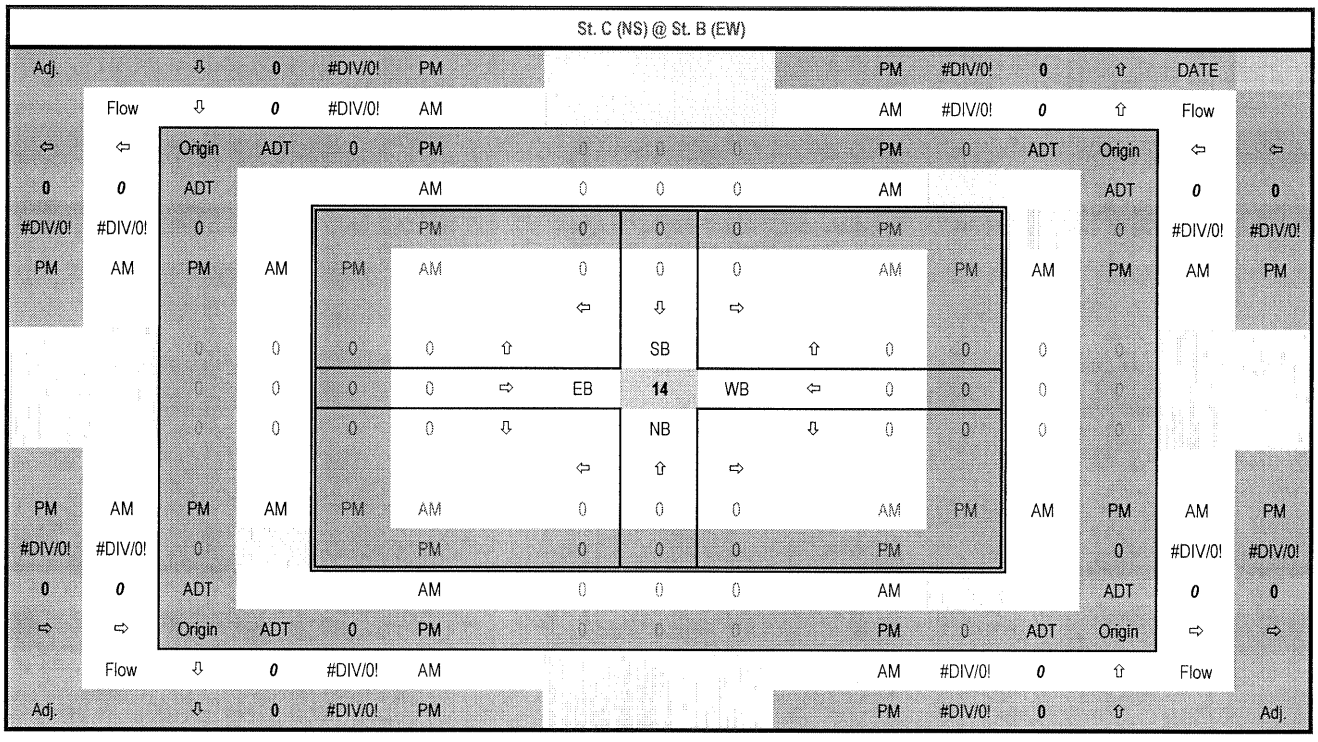

I-15 NB Ramps (NS) @ El Cerrito Rd. (EW)
Adj. ⇩ 0 5.2% PM PM 5.2% 280 ⇧ DATE
Flow ⇩ 0 12.1% AM AM 12.1% 654 ⇧ Flow
⇦ ⇦ Origin ADT 5,400 PM PM 5,400 ADT Origin ⇦ ⇦
327 617 ADT AM AM 2,000 ADT 494 170
7.0% 10.5% 12,500 PM PM 3,000 8,500 10.1% 5.7%
PM AM PM AM PM AM PM AM PM AM PM AM
⇦ ⇩ ⇨
248 436 248 436 ⇧ SB ⇧ 218 32 218 32
17 6 297 256 ⇨ EB 9 WB ⇦ 276 138 276 138 5
0 0 0 0 ⇩ NB ⇩ 0 0 0 0
⇦ ⇧ ⇨
PM AM PM AM PM AM 341 0 105 AM PM AM PM AM PM
7.0% 10.5% 12,500 2,300 PM 189 0 17 PM 8,500 10.1% 5.7%
545 692 ADT AM 341 6 105 AM 2,000 ADT 361 314
⇨ ⇨ Origin ADT 4,500 PM 189 6 17 PM 4,500 ADT Origin ⇨ ⇨
Flow ⇩ 0 9.9% AM -6 AM 9.9% 446 ⇧ Flow
Adj. ⇩ 0 4.6% PM -6 PM 4.6% 206 ⇧ Adj.


I-15 NB Ramps (NS) @ Cajalco Rd. (EW)
Adj. ⇩ 0 8.3% PM PM 8.3% 564 ⇧ DATE
Flow ⇩ 0 14.5% AM AM 14.5% 983 ⇧ Flow
⇦ ⇦ Origin ADT 6,800 PM PM 6,800 ADT Origin ⇦ ⇦
549 341 ADT AM AM ADT 934 812
8.8% 5.5% 17,600 PM PM 23,297 5.7% 7.8%
PM AM PM AM PM AM PM AM PM AM PM AM
⇦ ⇩ ⇨
190 302 190 302 ⇧ SB ⇧ 681 374 681 374
82 57 724 269 806 326 ⇨ EB 10 WB ⇦ 253 438 253 438
0 0 0 0 ⇩ NB ⇩ 0 0 0 0
⇦ ⇧ ⇨
PM AM PM AM PM AM 88 0 58 AM PM AM PM AM PM
8.8% 5.5% 17,600 PM 111 0 189 PM 23,297 5.7% 7.8%
996 628 ADT AM 88 1 58 AM ADT 384 995
⇨ ⇨ Origin ADT 3,600 PM 111 0 189 PM 3,600 ADT Origin ⇨ ⇨
Flow ⇩ 0 4.1% AM -1 AM 4.1% 146 ⇧ Flow
Adj. ⇩ 0 8.3% PM PM 8.3% 300 ⇧ Adj.


Grand Oaks (NS) @ Cajalco Rd. (EW)
Adj. ⇩ 545 8.3% PM PM 8.3% 638 ⇧ DATE
Flow ⇩ 89 1.8% AM AM 1.8% 171 ⇧ Flow
⇦ ⇦ Origin ADT 14,200 PM PM 14,200 ADT Origin ⇦ ⇦
785 917 ADT AM AM ADT 899 451
7.6% 5.6% 23,297 PM 437 0 108 PM 700 11,500 10.3% 8.9%
PM AM PM AM PM AM 70 0 19 AM PM AM PM AM PM
⇦ ⇩ ⇨
535 119 535 119 ⇧ SB ⇧ 52 103 52
104 57 460 265 ⇨ EB 11 WB ⇦ 847 348 816 31 16
0 0 0 0 ⇩ NB ⇩ 0 0 5 -5
⇦ ⇧ ⇨
PM AM PM AM PM AM 0 0 0 AM PM AM PM AM PM
7.6% 5.6% 23,297 PM 0 0 0 PM 11,500 10.3% 8.9%
995 384 ADT AM 0 0 0 AM ADT 284 568
⇨ ⇨ Origin ADT 0 PM 0 0 0 PM 0 ADT Origin ⇨ ⇨
Flow ⇩ 0 #DIV/0! AM AM #DIV/0! 0 ⇧ Flow
Adj. ⇩ 0 #DIV/0! PM PM #DIV/0! 0 ⇧ Adj.


Temescal Cyn. Rd. (NS) @ Cajalco Rd. (EW)
Adj. ⇩ 649 8.3% PM PM 8.3% 219 ⇧ DATE
Flow ⇩ 130 9.1% AM AM 9.1% 815 ⇧ Flow
⇦ ⇦ Origin ADT 10,400 PM PM 10,400 ADT Origin ⇦ ⇦
451 899 ADT AM AM ADT 566 394
8.9% 10.3% 11,500 PM 51 362 236 PM 10,900 9.2% 8.9%
PM AM PM AM PM AM 32 55 43 AM PM AM PM AM PM
⇦ ⇩ ⇨
13 15 13 15 ⇧ SB ⇧ 153 55 153
64 52 301 182 ⇨ EB 12 WB ⇦ 373 231 373
254 87 254 87 ⇩ NB ⇩ 40 108 40
⇦ ⇧ ⇨
PM AM PM AM PM AM 494 647 210 AM PM AM PM AM PM
8.9% 10.3% 11,500 PM 169 151 41 PM 10,900 9.2% 8.9%
568 284 ADT AM 494 647 210 AM ADT 435 578
⇨ ⇨ Origin ADT 13,000 PM 169 151 41 PM 13,000 ADT Origin ⇨ ⇨
Flow ⇩ 182 11.8% AM AM 11.8% 1,351 ⇧ Flow
Adj. ⇩ 724 8.3% PM PM 8.3% 361 ⇧ Adj.


St. C (NS) @ Eagle Glen Pkwy. (EW)
Adj. ⇩ 0 #DIV/0! PM
Flow ⇩ 0 #DIV/0! AM
Origin ADT 0 PM
ADT AM
7,700 PM
PM AM PM AM
0 0
287 300
0 0
PM AM
8.3% 7.3%
287 300 ADT
⇨ ⇨ Origin ADT 0 PM
Flow ⇩ 0 #DIV/0! AM
Adj. ⇩ 0 #DIV/0! PM
PM #DIV/0! 0 ⇧ DATE
AM #DIV/0! 0 ⇧ Flow
PM 0 ADT Origin ⇦ ⇦
AM ADT 265 354
PM 7,700 7.3% 8.3%
PM AM PM AM
0 0
265 354
0 0
PM AM
8.3% 7.3%
265 354 ADT
⇦ ⇦ Origin ADT 0 PM
Flow ⇩ 0 #DIV/0! AM
Adj. ⇩ 0 #DIV/0! PM
0 0 0
0 0 0
0 0 0
0 0 0
0 0 0
0 0 0
SB
EB 13 WB
NB
⇦ ⇩ ⇨
⇦ ⇧ ⇨


St. C (NS) @ St. B (EW)
Adj. ⇩ 0 #DIV/0! PM
Flow ⇩ 0 #DIV/0! AM
Origin ADT 0 PM
ADT AM
0 PM
PM AM PM AM
0 0
0 0
0 0
PM AM
#DIV/0! #DIV/0!
0 0 ADT
⇨ ⇨ Origin ADT 0 PM
Flow ⇩ 0 #DIV/0! AM
Adj. ⇩ 0 #DIV/0! PM
PM #DIV/0! 0 ⇧ DATE
AM #DIV/0! 0 ⇧ Flow
PM 0 ADT Origin ⇦ ⇦
AM ADT 0 0
PM 0 #DIV/0! #DIV/0!
PM AM PM AM
0 0
0 0
0 0
PM AM
#DIV/0! #DIV/0!
0 0 ADT
⇦ ⇦ Origin ADT 0 PM
Flow ⇩ 0 #DIV/0! AM
Adj. ⇩ 0 #DIV/0! PM
0 0 0
0 0 0
0 0 0
0 0 0
0 0 0
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SB
EB 14 WB
NB
⇦ ⇩ ⇨
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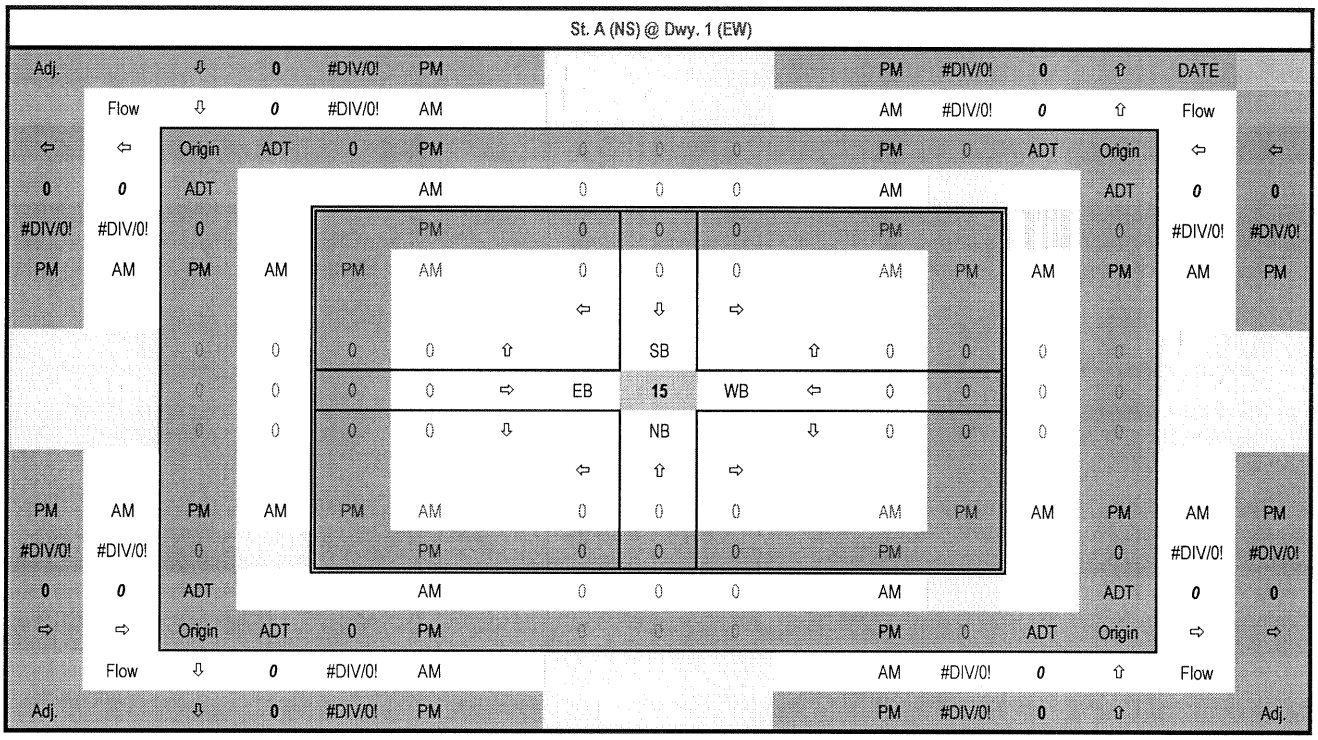
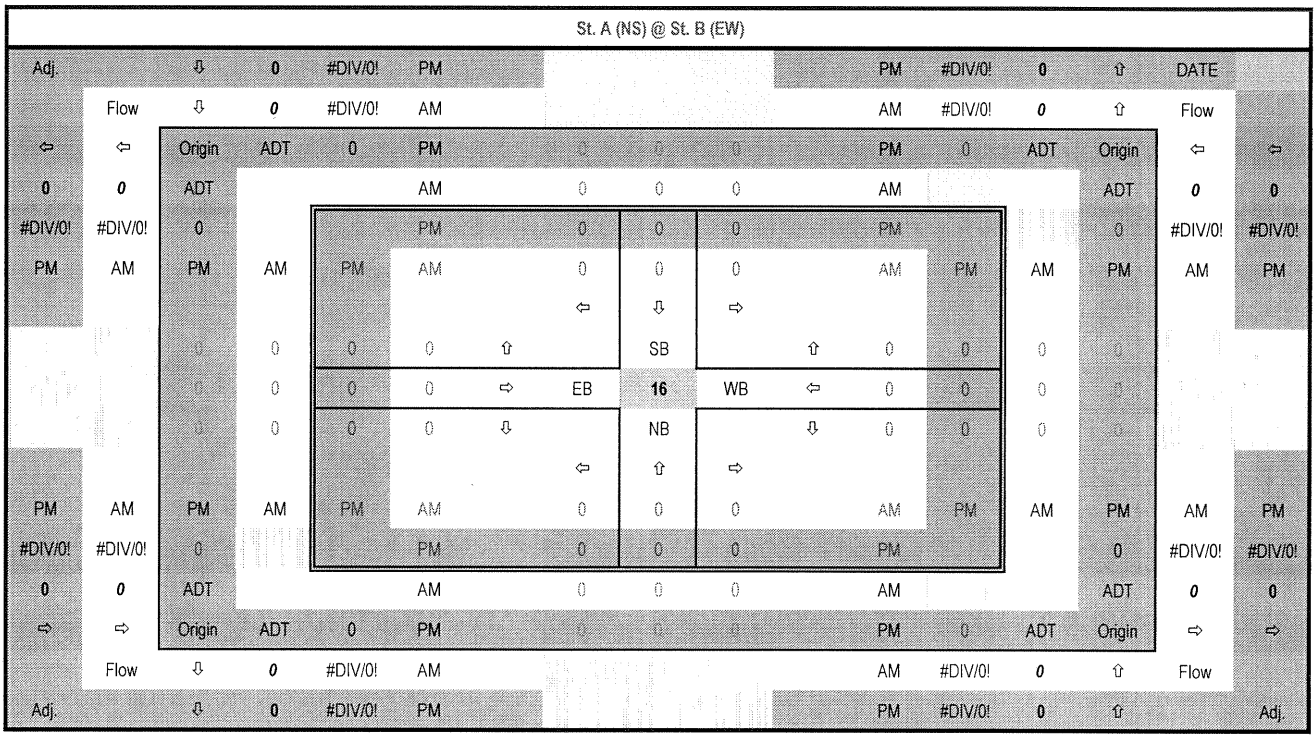

St. A (NS) @ Dwy. 1 (EW)
Adj.
Flow
Origin
ADT
PM
AM
#DIV/0!
DATE
SB
EB
15
WB
NB


St. A (NS) @ St. B (EW)
Adj.
Flow
Origin
ADT
PM
AM
#DIV/0!
SB
EB
16
WB
NB

APPENDIX 2.2

Existing 2009 Conditions
Traffic Signal Warrant Analysis Worksheets

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = 2009

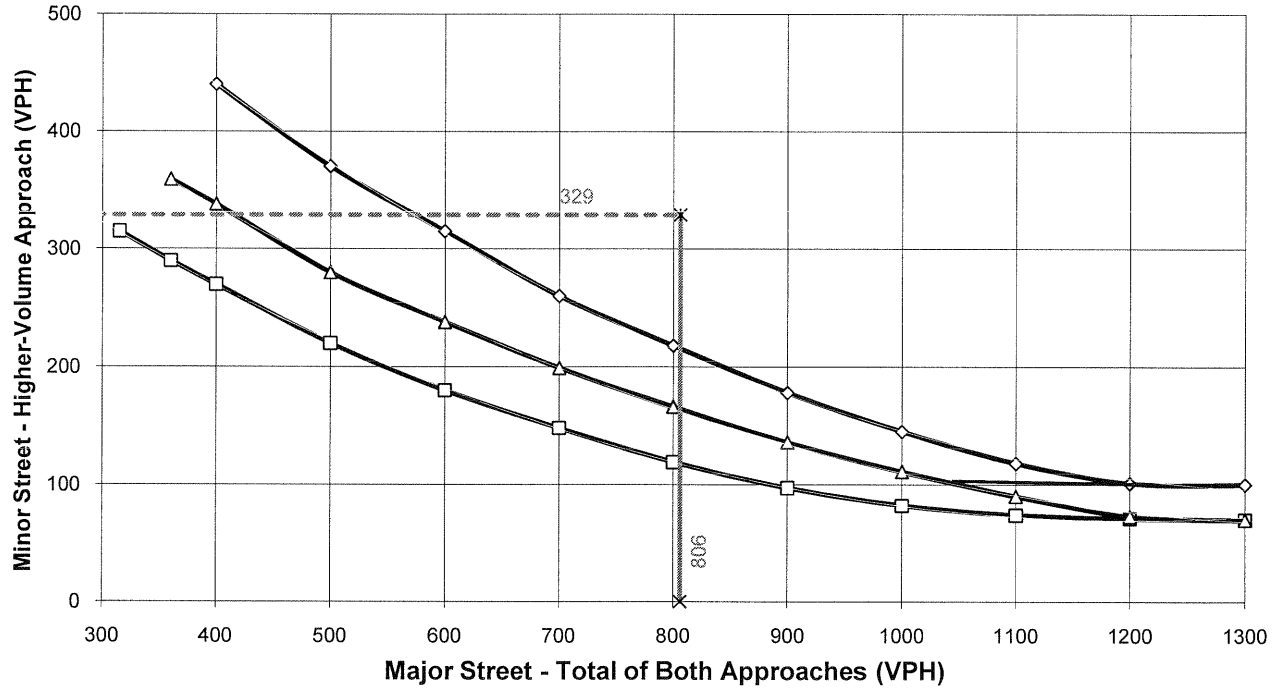
Major Street Name = Masters Dr.

Total of Both Approaches (VPH) = 806
Number of Approach Lanes Major Street = 1

Minor Street Name = California Dr.

High Volume Approach (VPH) = 329
Number of Approach Lanes Minor Street = 1

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = 2009

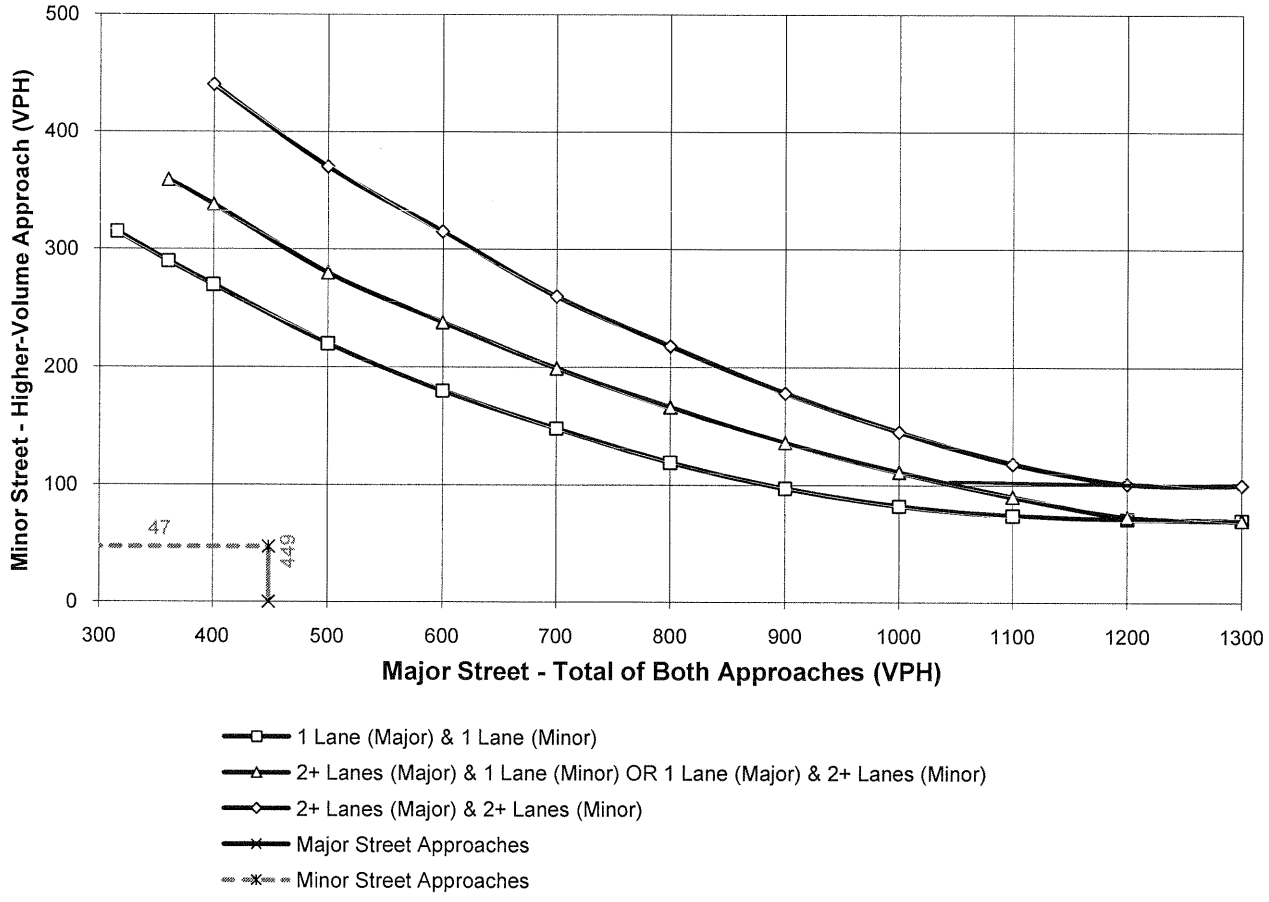
Major Street Name = Masters Dr.

Total of Both Approaches (VPH) = 449
Number of Approach Lanes Major Street = 1

Minor Street Name = Bennett Av.

High Volume Approach (VPH) = 47
Number of Approach Lanes Minor Street = 1

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

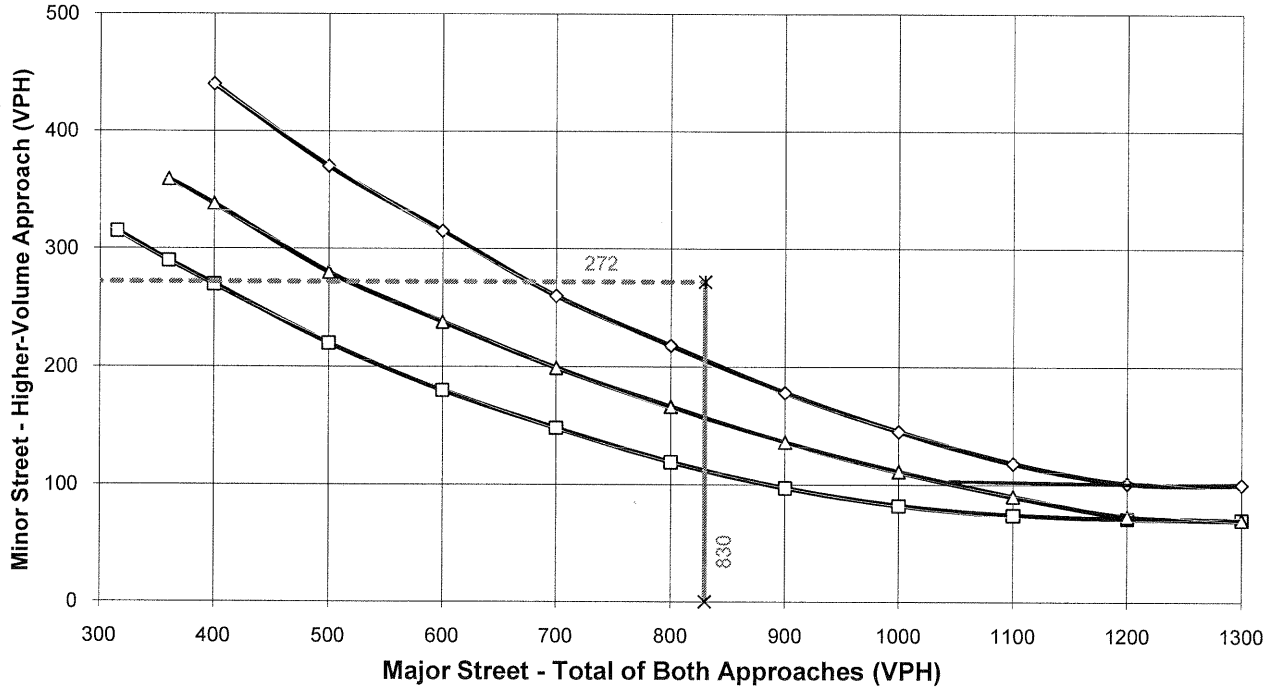
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = 2009

Major Street Name = Masters Dr.
Total of Both Approaches (VPH) = 830
Number of Approach Lanes Major Street = 2

Minor Street Name = Eagle Glen Pkwy.
High Volume Approach (VPH) = 272
Number of Approach Lanes Minor Street = 1

WARRANTED FOR A SIGNAL



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

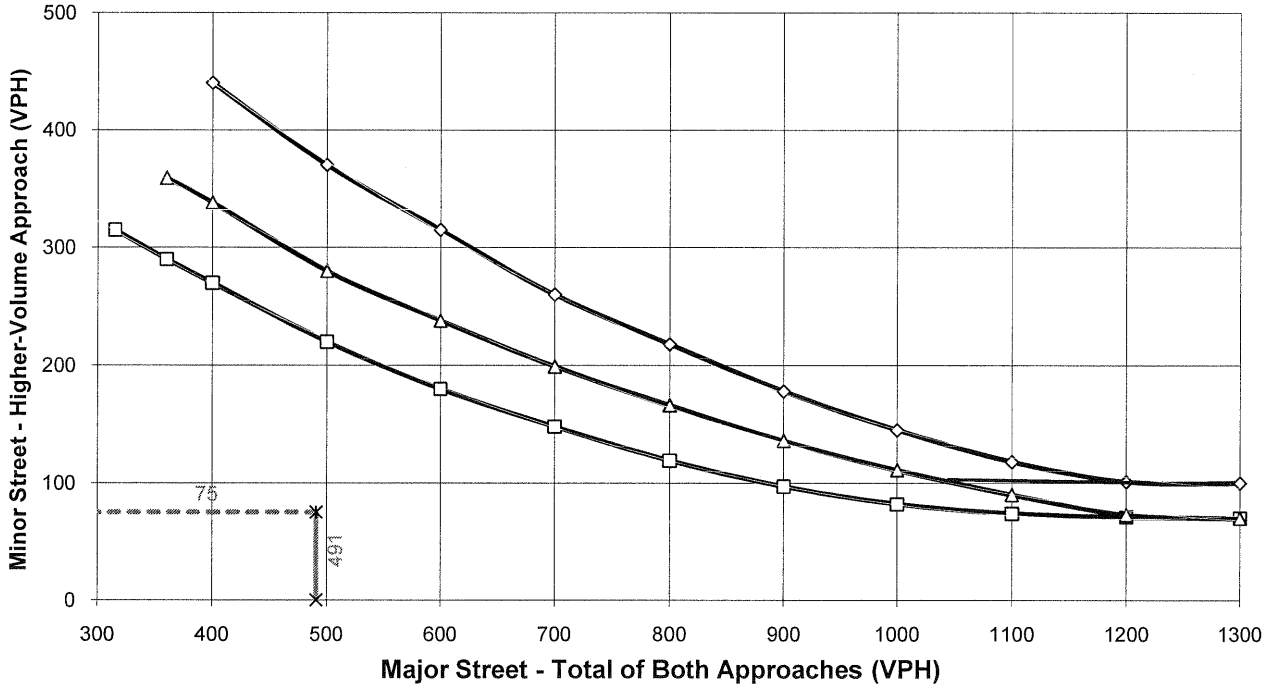
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = 2009

Major Street Name = Bedford Cyn. Rd. Total of Both Approaches (VPH) = 491
Number of Approach Lanes Major Street = 2

Minor Street Name = Georgetown Dr. High Volume Approach (VPH) = 75
Number of Approach Lanes Minor Street = 1

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach

APPENDIX 2.3

Existing 2009 Conditions
Intersection Operations Analysis Worksheets

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	1.118
Loss Time (sec):	0	Average Delay (sec/veh):	45.4
Optimal Cycle:	0	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1	0 1
Volume Module:												
Base Vol:	73	222	222	174	112	3	4	142	58	106	78	145
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	73	222	222	174	112	3	4	142	58	106	78	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
PHF Volume:	92	279	279	219	141	4	5	179	73	133	98	182
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	92	279	279	219	141	4	5	179	73	133	98	182
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	92	279	279	219	141	4	5	179	73	133	98	182
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.50	0.50	1.00	0.97	0.03	1.00	0.71	0.29	1.00	1.00	1.00
Final Sat.:	437	250	250	417	430	12	397	308	126	386	407	443
Capacity Analysis Module:												
Vol/Sat:	0.21	1.12	1.12	0.52	0.33	0.33	0.01	0.58	0.58	0.35	0.24	0.41
Crit Moves:		****		****				****				****
Delay/Veh:	12.8	102	102.2	19.8	14.3	14.3	11.6	21.0	21.0	16.4	14.0	15.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	12.8	102	102.2	19.8	14.3	14.3	11.6	21.0	21.0	16.4	14.0	15.9
LOS by Move:	B	F	F	C	B	B	B	C	C	C	B	C
ApproachDel:		89.6			17.6			20.8			15.6	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		89.6			17.6			20.8			15.6	
LOS by Appr:		F			C			C			C	
AllWayAvgQ:	0.3	12.8	12.8	1.0	0.5	0.5	0.0	1.2	1.2	0.5	0.3	0.6

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.389
Loss Time (sec):	0	Average Delay (sec/veh):	11.1
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1	0 1
Volume Module:												
Base Vol:	55	61	121	28	94	1	3	73	124	194	88	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	55	61	121	28	94	1	3	73	124	194	88	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	58	64	127	29	98	1	3	76	130	203	92	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	58	64	127	29	98	1	3	76	130	203	92	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	58	64	127	29	98	1	3	76	130	203	92	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.34	0.66	1.00	0.99	0.01	1.00	0.37	0.63	1.00	1.00	1.00
Final Sat.:	515	201	399	495	529	6	523	226	385	522	560	625
Capacity Analysis Module:												
Vol/Sat:	0.11	0.32	0.32	0.06	0.19	0.19	0.01	0.34	0.34	0.39	0.16	0.03
Crit Moves:			****		****			****		****		
Delay/Veh:	10.1	10.8	10.8	9.9	10.3	10.3	9.3	10.9	10.9	13.3	10.0	8.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.1	10.8	10.8	9.9	10.3	10.3	9.3	10.9	10.9	13.3	10.0	8.3
LOS by Move:	B	B	B	A	B	B	A	B	B	B	B	A
ApproachDel:		10.6			10.2			10.8			12.0	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		10.6			10.2			10.8			12.0	
LOS by Appr:		B			B			B			B	
AllWayAvgQ:	0.1	0.4	0.4	0.1	0.2	0.2	0.0	0.4	0.4	0.6	0.2	0.0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bonnett Av. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.225
Loss Time (sec):	0	Average Delay (sec/veh):	8.6
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	6	111	12	21	133	10	40	8	21	10	2	29
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	111	12	21	133	10	40	8	21	10	2	29
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	7	127	14	24	152	11	46	9	24	11	2	33
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	127	14	24	152	11	46	9	24	11	2	33
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	127	14	24	152	11	46	9	24	11	2	33
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	0.93	0.07	0.58	0.12	0.30	0.24	0.05	0.71
Final Sat.:	647	650	70	652	674	51	419	84	220	185	37	538
Capacity Analysis Module:												
Vol/Sat:	0.01	0.19	0.19	0.04	0.23	0.23	0.11	0.11	0.11	0.06	0.06	0.06
Crit Moves:		****			****		****			****		
Delay/Veh:	8.2	8.7	8.7	8.3	8.9	8.9	8.2	8.2	8.2	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.7	8.7	8.3	8.9	8.9	8.2	8.2	8.2	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.7			8.9			8.2			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.7			8.9			8.2			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.2	0.2	0.0	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bonnett Av. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.346
Loss Time (sec):	0	Average Delay (sec/veh):	9.2
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	25	153	11	14	216	30	12	6	29	9	12	21
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	25	153	11	14	216	30	12	6	29	9	12	21
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	26	159	11	15	225	31	12	6	30	9	12	22
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	26	159	11	15	225	31	12	6	30	9	12	22
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	26	159	11	15	225	31	12	6	30	9	12	22
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.93	0.07	1.00	0.88	0.12	0.25	0.13	0.62	0.21	0.29	0.50
Final Sat.:	650	675	49	659	649	90	179	89	432	148	197	346
Capacity Analysis Module:												
Vol/Sat:	0.04	0.24	0.24	0.02	0.35	0.35	0.07	0.07	0.07	0.06	0.06	0.06
Crit Moves:			****		****			****			****	
Delay/Veh:	8.4	9.1	9.1	8.2	10.0	10.0	8.0	8.0	8.0	8.1	8.1	8.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	9.1	9.1	8.2	10.0	10.0	8.0	8.0	8.0	8.1	8.1	8.1
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		9.0			9.9			8.0			8.1	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.0			9.9			8.0			8.1	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.3	0.3	0.0	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.366
Loss Time (sec):	0	Average Delay (sec/veh):	11.5
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	130	0	8	7	293	0	0	257	107
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	130	0	8	7	293	0	0	257	107
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
PHF Volume:	0	0	0	168	0	10	9	379	0	0	332	138
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	168	0	10	9	379	0	0	332	138
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	168	0	10	9	379	0	0	332	138
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.41	0.59
Final Sat.:	0	0	0	498	0	589	527	1147	0	0	907	398
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.34	xxxx	0.02	0.02	0.33	xxxx	xxxx	0.37	0.35
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	12.8	0.0	8.5	9.4	11.7	0.0	0.0	11.2	10.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	12.8	0.0	8.5	9.4	11.7	0.0	0.0	11.2	10.5
LOS by Move:	*	*	*	B	*	A	A	B	*	*	B	B
ApproachDel:	xxxxxx			12.6			11.6			11.0		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			12.6			11.6			11.0		
LOS by Appr:	*			B			B			B		
AllWayAvgQ:	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.5	0.0	0.0	0.6	0.5

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.566
Loss Time (sec):	0	Average Delay (sec/veh):	14.2
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0	0	0	1 0	0	1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	254	0	18	15	272	0	0	336	207
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	254	0	18	15	272	0	0	336	207
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	279	0	20	16	298	0	0	368	227
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	279	0	20	16	298	0	0	368	227
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	279	0	20	16	298	0	0	368	227
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.24	0.76
Final Sat.:	0	0	0	492	0	579	471	1017	0	0	736	488
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.57	xxxx	0.03	0.03	0.29	xxxx	xxxx	0.50	0.47
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	18.0	0.0	8.8	10.3	12.2	0.0	0.0	14.2	12.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	18.0	0.0	8.8	10.3	12.2	0.0	0.0	14.2	12.7
LOS by Move:	*	*	*	C	*	A	B	B	*	*	B	B
ApproachDel:	xxxxxx			17.4			12.1			13.6		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			17.4			12.1			13.6		
LOS by Appr:	*			C			B			B		
AllWayAvgQ:	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.4	0.0	0.0	0.9	0.8

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.425
Loss Time (sec):	12	Average Delay (sec/veh):	17.4
Optimal Cycle:	120	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 0	0 1	0	0 0	0 0	0	0 1	1 0	1	0 2	0 0
Volume Module:												
Base Vol:	176	0	104	0	0	0	0	726	46	28	678	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	176	0	104	0	0	0	0	726	46	28	678	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	205	0	121	0	0	0	0	844	53	33	788	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	205	0	121	0	0	0	0	844	53	33	788	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	205	0	121	0	0	0	0	844	53	33	788	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.94	0.94	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.88	0.12	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3364	213	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.11	0.00	0.07	0.00	0.00	0.00	0.00	0.25	0.25	0.02	0.22	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.56	0.56	0.08	0.65	0.00
Volume/Cap:	0.45	0.00	0.29	0.00	0.00	0.00	0.00	0.45	0.45	0.22	0.34	0.00
Delay/Veh:	38.3	0.0	36.5	0.0	0.0	0.0	0.0	15.5	15.5	52.1	9.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.3	0.0	36.5	0.0	0.0	0.0	0.0	15.5	15.5	52.1	9.7	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	7	0	4	0	0	0	0	10	10	1	7	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.556
Loss Time (sec):	12	Average Delay (sec/veh):	19.4
Optimal Cycle:	120	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0	0	0 1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	102	0	98	0	0	0	0	933	181	174	412	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	102	0	98	0	0	0	0	933	181	174	412	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	109	0	104	0	0	0	0	995	193	186	439	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	109	0	104	0	0	0	0	995	193	186	439	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	109	0	104	0	0	0	0	995	193	186	439	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.68	0.32	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	2951	572	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.34	0.34	0.10	0.12	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.59	0.59	0.18	0.78	0.00
Volume/Cap:	0.48	0.00	0.52	0.00	0.00	0.00	0.00	0.57	0.57	0.57	0.16	0.00
Delay/Veh:	50.5	0.0	51.5	0.0	0.0	0.0	0.0	15.3	15.3	47.2	3.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.5	0.0	51.5	0.0	0.0	0.0	0.0	15.3	15.3	47.2	3.5	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	4	0	4	0	0	0	0	14	14	6	2	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.226
Loss Time (sec):	0	Average Delay (sec/veh):	8.7
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	0	1 0	0 1	0	1 0	0 1	0	0 1!	0 0
Volume Module:												
Base Vol:	16	144	5	4	55	27	81	3	30	1	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	16	144	5	4	55	27	81	3	30	1	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.00	0.90	0.90	0.90
PHF Volume:	18	160	6	4	61	30	90	3	0	1	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	160	6	4	61	30	90	3	0	1	1	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	18	160	6	4	61	30	90	3	0	1	1	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.97	0.03	0.07	0.93	1.00	0.96	0.04	1.00	0.34	0.33	0.33
Final Sat.:	661	709	25	48	663	831	593	22	768	221	221	221
Capacity Analysis Module:												
Vol/Sat:	0.03	0.23	0.23	0.09	0.09	0.04	0.15	0.15	0.00	0.01	0.01	0.01
Crit Moves:		****			****		****			****		
Delay/Veh:	8.2	8.9	8.9	8.2	8.2	7.1	9.3	9.3	0.0	8.2	8.2	8.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.9	8.9	8.2	8.2	7.1	9.3	9.3	0.0	8.2	8.2	8.2
LOS by Move:	A	A	A	A	A	A	A	A	*	A	A	A
ApproachDel:		8.8			7.8			9.3			8.2	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.8			7.8			9.3			8.2	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.3	0.3	0.1	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.351
Loss Time (sec):	0	Average Delay (sec/veh):	9.1
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	0 1	0 0	1	0 1	0 0	1	0 0	1! 0	0
Volume Module:												
Base Vol:	26	126	7	7	225	91	42	1	22	1	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	126	7	7	225	91	42	1	22	1	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.00	0.89	0.89	0.89
PHF Volume:	29	141	8	8	252	102	47	1	0	1	1	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	29	141	8	8	252	102	47	1	0	1	1	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	29	141	8	8	252	102	47	1	0	1	1	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.95	0.05	0.03	0.97	1.00	0.98	0.02	1.00	0.25	0.25	0.50
Final Sat.:	652	686	38	22	718	865	534	13	666	152	152	303
Capacity Analysis Module:												
Vol/Sat:	0.04	0.21	0.21	0.35	0.35	0.12	0.09	0.09	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	8.4	8.8	8.8	10.1	10.1	7.3	9.4	9.4	0.0	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	8.8	8.8	10.1	10.1	7.3	9.4	9.4	0.0	8.5	8.5	8.5
LOS by Move:	A	A	A	B	B	A	A	A	*	A	A	A
ApproachDel:		8.8			9.3			9.4			8.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.8			9.3			9.4			8.5	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.3	0.3	0.5	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.211
Loss Time (sec):	12	Average Delay (sec/veh):	17.7
Optimal Cycle:	120	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	2	0 1
Volume Module:												
Base Vol:	0	0	0	113	0	57	29	394	0	0	307	65
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	113	0	57	29	394	0	0	307	65
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	0	0	0	131	0	66	34	456	0	0	355	75
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	131	0	66	34	456	0	0	355	75
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	131	0	66	34	456	0	0	355	75
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.95	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.07	0.00	0.04	0.02	0.13	0.00	0.00	0.10	0.05
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.34	0.00	0.43	0.09	0.56	0.00	0.00	0.47	0.81
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.09	0.21	0.23	0.00	0.00	0.21	0.06
Delay/Veh:	0.0	0.0	0.0	28.0	0.0	20.2	51.5	13.6	0.0	0.0	18.9	2.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	28.0	0.0	20.2	51.5	13.6	0.0	0.0	18.9	2.2
LOS by Move:	A	A	A	C	A	C	D	B	A	A	B	A
HCM2kAvgQ:	0	0	0	3	0	1	1	4	0	0	4	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.432
Loss Time (sec):	12	Average Delay (sec/veh):	25.8
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	2	0 1
Volume Module:												
Base Vol:	0	0	0	374	0	89	46	480	0	0	454	41
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	374	0	89	46	480	0	0	454	41
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	406	0	97	50	521	0	0	492	44
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	406	0	97	50	521	0	0	492	44
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	406	0	97	50	521	0	0	492	44
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.95	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.22	0.00	0.06	0.03	0.14	0.00	0.00	0.14	0.03
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.51	0.00	0.59	0.08	0.39	0.00	0.00	0.31	0.82
Volume/Cap:	0.00	0.00	0.00	0.44	0.00	0.10	0.33	0.37	0.00	0.00	0.44	0.03
Delay/Veh:	0.0	0.0	0.0	19.1	0.0	10.7	53.2	26.1	0.0	0.0	33.5	2.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	19.1	0.0	10.7	53.2	26.1	0.0	0.0	33.5	2.1
LOS by Move:	A	A	A	B	A	B	D	C	A	A	C	A
HCM2kAvgQ:	0	0	0	9	0	2	2	7	0	0	7	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.517
Loss Time (sec):	12	Average Delay (sec/veh):	20.9
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0	1 0	0 1	0	0 1	1 0	1	0 2	0 0
Volume Module:												
Base Vol:	0	0	0	92	0	188	0	600	230	99	518	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	92	0	188	0	600	230	99	518	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	0	0	0	104	0	213	0	680	260	112	587	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	104	0	213	0	680	260	112	587	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	104	0	213	0	680	260	112	587	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.91	0.91	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.45	0.55	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2500	958	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.13	0.00	0.27	0.27	0.06	0.16	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.25	0.00	0.25	0.00	0.53	0.53	0.12	0.65	0.00
Volume/Cap:	0.00	0.00	0.00	0.23	0.00	0.52	0.00	0.52	0.52	0.52	0.25	0.00
Delay/Veh:	0.0	0.0	0.0	35.6	0.0	39.5	0.0	18.8	18.8	51.7	9.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	35.6	0.0	39.5	0.0	18.8	18.8	51.7	9.1	0.0
LOS by Move:	A	A	A	D	A	D	A	B	B	D	A	A
HCM2kAvgQ:	0	0	0	3	0	7	0	12	12	4	5	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.654
Loss Time (sec):	12	Average Delay (sec/veh):	24.0
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0	1 0	0 1	0	0 1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	104	0	302	0	441	590	43	284	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	104	0	302	0	441	590	43	284	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	0	0	0	108	0	313	0	457	611	45	294	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	108	0	313	0	457	611	45	294	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	108	0	313	0	457	611	45	294	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.87	0.87	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1650	1650	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.19	0.00	0.28	0.37	0.02	0.08	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.28	0.00	0.28	0.00	0.54	0.54	0.08	0.62	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.69	0.00	0.52	0.69	0.30	0.13	0.00
Delay/Veh:	0.0	0.0	0.0	33.2	0.0	43.0	0.0	18.1	21.8	52.8	9.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.2	0.0	43.0	0.0	18.1	21.8	52.8	9.5	0.0
LOS by Move:	A	A	A	C	A	D	A	B	C	D	A	A
HCM2kAvgQ:	0	0	0	3	0	11	0	11	17	2	2	0

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.439
Loss Time (sec):	12	Average Delay (sec/veh):	25.3
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	219	0	201	98	409	0	0	267	74
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	219	0	201	98	409	0	0	267	74
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	0	0	0	238	0	218	106	444	0	0	290	80
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	238	0	218	106	444	0	0	290	80
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	238	0	218	106	444	0	0	290	80
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.97	0.97
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.78	0.22
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1445	400
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.13	0.00	0.14	0.06	0.23	0.00	0.00	0.20	0.20
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.31	0.13	0.59	0.00	0.00	0.46	0.46
Volume/Cap:	0.00	0.00	0.00	0.43	0.00	0.44	0.44	0.39	0.00	0.00	0.44	0.44
Delay/Veh:	0.0	0.0	0.0	33.6	0.0	33.8	49.0	13.3	0.0	0.0	22.5	22.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.6	0.0	33.8	49.0	13.3	0.0	0.0	22.5	22.5
LOS by Move:	A	A	A	C	A	C	D	B	A	A	C	C
HCM2kAvgQ:	0	0	0	7	0	7	4	8	0	0	9	9

Note: Queue reported is the number of cars per lane.

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to URBAN CROSSROADS, IRVINE

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.793
Loss Time (sec):	12	Average Delay (sec/veh):	35.3
Optimal Cycle:	120	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	405	0	266	263	591	0	0	382	167
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	405	0	266	263	591	0	0	382	167
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	0	0	430	0	283	279	628	0	0	406	177
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	430	0	283	279	628	0	0	406	177
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	430	0	283	279	628	0	0	406	177
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.96	0.96
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.70	0.30
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1268	554
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.24	0.00	0.18	0.15	0.33	0.00	0.00	0.32	0.32
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.30	0.00	0.30	0.20	0.60	0.00	0.00	0.40	0.40
Volume/Cap:	0.00	0.00	0.00	0.79	0.00	0.58	0.79	0.55	0.00	0.00	0.79	0.79
Delay/Veh:	0.0	0.0	0.0	46.4	0.0	37.3	57.6	15.0	0.0	0.0	37.3	37.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	46.4	0.0	37.3	57.6	15.0	0.0	0.0	37.3	37.3
LOS by Move:	A	A	A	D	A	D	E	B	A	A	D	D
HCM2kAvgQ:	0	0	0	16	0	9	10	14	0	0	18	18

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.687
Loss Time (sec):	12	Average Delay (sec/veh):	36.7
Optimal Cycle:	120	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	341	0	105	0	0	0	436	256	0	0	276	218
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	341	0	105	0	0	0	436	256	0	0	276	218
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
PHF Volume:	403	0	124	0	0	0	515	303	0	0	326	258
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	403	0	124	0	0	0	515	303	0	0	326	258
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	403	0	124	0	0	0	515	303	0	0	326	258
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.89	0.89
Lanes:	0.76	0.00	0.24	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.12	0.88
Final Sat.:	1354	0	417	0	0	0	3502	1900	0	0	1884	1488
Capacity Analysis Module:												
Vol/Sat:	0.30	0.00	0.30	0.00	0.00	0.00	0.15	0.16	0.00	0.00	0.17	0.17
Crit Moves:			****				****				****	
Green/Cycle:	0.43	0.00	0.43	0.00	0.00	0.00	0.21	0.47	0.00	0.00	0.25	0.25
Volume/Cap:	0.69	0.00	0.69	0.00	0.00	0.00	0.69	0.34	0.00	0.00	0.69	0.69
Delay/Veh:	30.0	0.0	30.0	0.0	0.0	0.0	46.1	20.5	0.0	0.0	42.9	42.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.0	0.0	30.0	0.0	0.0	0.0	46.1	20.5	0.0	0.0	42.9	42.9
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	16	0	16	0	0	0	9	7	0	0	11	11

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.279
Loss Time (sec):	12	Average Delay (sec/veh):	28.8
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	189	0	17	0	0	0	248	297	0	0	138	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	189	0	17	0	0	0	248	297	0	0	138	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	203	0	18	0	0	0	266	319	0	0	148	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	203	0	18	0	0	0	266	319	0	0	148	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	203	0	18	0	0	0	266	319	0	0	148	34
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.95	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	0.92
Lanes:	0.92	0.00	0.08	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.62	0.38
Final Sat.:	1648	0	148	0	0	0	3502	1900	0	0	2848	661
Capacity Analysis Module:												
Vol/Sat:	0.12	0.00	0.12	0.00	0.00	0.00	0.08	0.17	0.00	0.00	0.05	0.05
Crit Moves:	****						****				****	
Green/Cycle:	0.44	0.00	0.44	0.00	0.00	0.00	0.27	0.46	0.00	0.00	0.19	0.19
Volume/Cap:	0.28	0.00	0.28	0.00	0.00	0.00	0.28	0.37	0.00	0.00	0.28	0.28
Delay/Veh:	21.6	0.0	21.6	0.0	0.0	0.0	34.5	21.4	0.0	0.0	42.1	42.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.6	0.0	21.6	0.0	0.0	0.0	34.5	21.4	0.0	0.0	42.1	42.1
LOS by Move:	C	A	C	A	A	A	C	C	A	A	D	D
HCM2kAvgQ:	5	0	5	0	0	0	4	7	0	0	3	3

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.762
Loss Time (sec):	12	Average Delay (sec/veh):	28.1
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	1 0	0 1	0	0 0	0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	88	0	58	0	0	0	302	326	0	0	253	681
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	0	58	0	0	0	302	326	0	0	253	681
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	95	0	62	0	0	0	325	351	0	0	272	732
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	0	62	0	0	0	325	351	0	0	272	732
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	95	0	62	0	0	0	325	351	0	0	272	732
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.00	0.04	0.00	0.00	0.00	0.18	0.18	0.00	0.00	0.14	0.45
Crit Moves:	****						****					****
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.22	0.78	0.00	0.00	0.55	0.55
Volume/Cap:	0.42	0.00	0.31	0.00	0.00	0.00	0.82	0.24	0.00	0.00	0.26	0.82
Delay/Veh:	49.7	0.0	48.7	0.0	0.0	0.0	56.9	3.8	0.0	0.0	14.0	27.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.7	0.0	48.7	0.0	0.0	0.0	56.9	3.8	0.0	0.0	14.0	27.7
LOS by Move:	D	A	D	A	A	A	E	A	A	A	B	C
HCM2kAvgQ:	4	0	2	0	0	0	12	4	0	0	5	23

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.554
Loss Time (sec):	12	Average Delay (sec/veh):	32.3
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	1 0	0 1	0	0 0	0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	111	0	189	0	0	0	190	806	0	0	438	374
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	111	0	189	0	0	0	190	806	0	0	438	374
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	114	0	194	0	0	0	195	828	0	0	450	384
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	114	0	194	0	0	0	195	828	0	0	450	384
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	114	0	194	0	0	0	195	828	0	0	450	384
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.12	0.00	0.00	0.00	0.11	0.44	0.00	0.00	0.24	0.24
Crit Moves:	****							****				
Green/Cycle:	0.15	0.00	0.15	0.00	0.00	0.00	0.46	0.75	0.00	0.00	0.29	0.29
Volume/Cap:	0.43	0.00	0.82	0.00	0.00	0.00	0.23	0.58	0.00	0.00	0.82	0.82
Delay/Veh:	47.7	0.0	68.9	0.0	0.0	0.0	19.5	7.1	0.0	0.0	48.9	50.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.7	0.0	68.9	0.0	0.0	0.0	19.5	7.1	0.0	0.0	48.9	50.8
LOS by Move:	D	A	E	A	A	A	B	A	A	A	D	D
HCM2kAvgQ:	4	0	9	0	0	0	4	13	0	0	16	14

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.253
Loss Time (sec):	12	Average Delay (sec/veh):	14.6
Optimal Cycle:	120	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	19	0	70	119	265	0	0	847	52
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	19	0	70	119	265	0	0	847	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	0	0	0	21	0	77	130	290	0	0	928	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	21	0	77	130	290	0	0	928	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	21	0	77	130	290	0	0	928	57
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.01	0.00	0.03	0.04	0.08	0.00	0.00	0.18	0.04
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.29	0.13	0.73	0.00	0.00	0.61	0.61
Volume/Cap:	0.00	0.00	0.00	0.07	0.00	0.09	0.29	0.11	0.00	0.00	0.29	0.06
Delay/Veh:	0.0	0.0	0.0	42.2	0.0	30.9	47.9	4.7	0.0	0.0	11.3	9.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.2	0.0	30.9	47.9	4.7	0.0	0.0	11.3	9.6
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	A
HCM2kAvgQ:	0	0	0	1	0	1	2	2	0	0	6	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.325
Loss Time (sec):	12	Average Delay (sec/veh):	24.1
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	0	1	0	0	2	2	0	2	0	0	0	0	3	0	1
Volume Module:												
Base Vol:	0	0	0	108	0	437	535	460	0	0	348	103
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	108	0	437	535	460	0	0	348	103
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	0	0	0	113	0	458	560	482	0	0	364	108
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	113	0	458	560	482	0	0	364	108
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	113	0	458	560	482	0	0	364	108
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.16	0.16	0.13	0.00	0.00	0.07	0.07
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.37	0.00	0.74	0.37	0.53	0.00	0.00	0.16	0.16
Volume/Cap:	0.00	0.00	0.00	0.17	0.00	0.22	0.43	0.25	0.00	0.00	0.43	0.41
Delay/Veh:	0.0	0.0	0.0	25.5	0.0	4.9	28.8	15.4	0.0	0.0	45.7	46.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	25.5	0.0	4.9	28.8	15.4	0.0	0.0	45.7	46.3
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	3	0	3	8	5	0	0	4	3

Note: Queue reported is the number of cars per lane.

Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.588
Loss Time (sec):	16	Average Delay (sec/veh):	35.1
Optimal Cycle:	120	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1	1 0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	494	647	210	43	55	32	15	182	87	40	373	153
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	494	647	210	43	55	32	15	182	87	40	373	153
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	526	689	224	46	59	34	16	194	93	43	397	163
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	526	689	224	46	59	34	16	194	93	43	397	163
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	526	689	224	46	59	34	16	194	93	43	397	163
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.90	0.90	0.95	1.00	0.85	0.95	0.87	0.87
Lanes:	2.00	1.00	1.00	1.00	1.26	0.74	1.00	1.00	1.00	1.00	2.13	0.87
Final Sat.:	3502	1900	1615	1805	2157	1255	1805	1900	1615	1805	3516	1442
Capacity Analysis Module:												
Vol/Sat:	0.15	0.36	0.14	0.03	0.03	0.03	0.01	0.10	0.06	0.02	0.11	0.11
Crit Moves:		****		****			****				****	
Green/Cycle:	0.29	0.53	0.53	0.08	0.32	0.32	0.08	0.17	0.17	0.08	0.17	0.17
Volume/Cap:	0.51	0.68	0.26	0.30	0.08	0.08	0.11	0.61	0.34	0.28	0.68	0.68
Delay/Veh:	35.8	22.4	15.3	52.9	28.2	28.2	51.2	49.9	45.0	52.7	49.2	49.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	35.8	22.4	15.3	52.9	28.2	28.2	51.2	49.9	45.0	52.7	49.2	49.2
LOS by Move:	D	C	B	D	C	C	D	D	D	D	D	D
HCM2kAvgQ:	9	19	4	2	1	1	1	7	3	2	8	8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
Existing 2009 Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.515
Loss Time (sec):	16	Average Delay (sec/veh):	37.9
Optimal Cycle:	120	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1	1 0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	169	151	41	236	362	51	13	301	254	108	231	55
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	169	151	41	236	362	51	13	301	254	108	231	55
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	176	157	43	246	377	53	14	314	265	113	241	57
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	176	157	43	246	377	53	14	314	265	113	241	57
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	176	157	43	246	377	53	14	314	265	113	241	57
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.93	0.93	0.95	1.00	0.85	0.95	0.88	0.88
Lanes:	2.00	1.00	1.00	1.00	1.75	0.25	1.00	1.00	1.00	1.00	2.42	0.58
Final Sat.:	3502	1900	1615	1805	3107	438	1805	1900	1615	1805	4068	969
Capacity Analysis Module:												
Vol/Sat:	0.05	0.08	0.03	0.14	0.12	0.12	0.01	0.17	0.16	0.06	0.06	0.06
Crit Moves:		****		****				****		****		
Green/Cycle:	0.14	0.17	0.17	0.26	0.29	0.29	0.15	0.32	0.32	0.12	0.29	0.29
Volume/Cap:	0.35	0.50	0.16	0.52	0.42	0.42	0.05	0.52	0.52	0.52	0.20	0.20
Delay/Veh:	46.8	46.7	43.1	38.8	35.1	35.1	44.2	34.3	34.3	51.8	32.0	32.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	46.8	46.7	43.1	38.8	35.1	35.1	44.2	34.3	34.3	51.8	32.0	32.0
LOS by Move:	D	D	D	D	D	D	D	C	C	D	C	C
HCM2kAvgQ:	3	6	1	8	7	7	0	9	8	5	3	3

Note: Queue reported is the number of cars per lane.

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APPENDIX 2.4

Existing 2009 Conditions
Freeway Ramp Analysis Worksheets

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp	Terrain: Level	Downstream Adj Ramp
☐ Yes ☐ On		☑ Yes ☑ On
☑ No ☐ Off		☐ No ☐ Off
L_{up} = ft		L_{down} = 2500 ft
V_u = veh/h	S_{FF} = 65.0 mph S_{FR} = 35.0 mph Sketch (show lanes, L_A, L_D,V_R,V_f)	V_D = 329 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6193	0.92	Level	11	0	0.948	1.00	7102
Ramp	280	0.92	Level	11	0	0.948	1.00	321
UpStream								
DownStream	329	0.92	Level	11	0	0.948	1.00	377

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 0.568 using Equation (Exhibit 25-12)

V_{12} = 4170 pc/h

V_3 or V_{av34} 2932 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = 4402 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7102	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	6781	Exhibit 25-14	7050	No
V_R	321	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4170	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 28.6 (pc/mi/ln)

LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.457 (Exhibit 25-19)

S_R= 54.5 mph (Exhibit 25-19)

S_0= 64.7 mph (Exhibit 25-19)

S = 58.0 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 633 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6556	0.92	Level	11	0	0.948	1.00	7518
Ramp	406	0.92	Level	11	0	0.948	1.00	466
UpStream								
DownStream	633	0.92	Level	11	0	0.948	1.00	726

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.551 using Equation (Exhibit 25-12)
V_{12} = 4349 pc/h
V_3 or V_{av34} 3169 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4818 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7518	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7052	Exhibit 25-14	7050	Yes
V_R	466	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4349	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 32.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.470 (Exhibit 25-19)
S_R= 54.2 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.5 mph (Exhibit 25-15)

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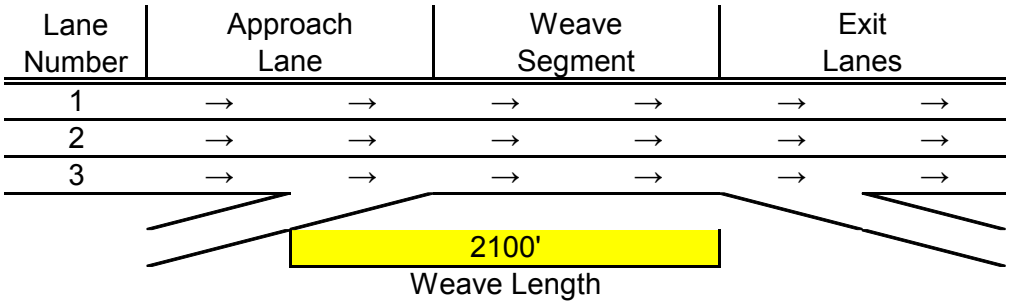
Weave Configuration

Roadway	I-15 Freeway Southbound
Segment:	El Cerritos Road ~ Cajalco Road
Description:	Existing 2009

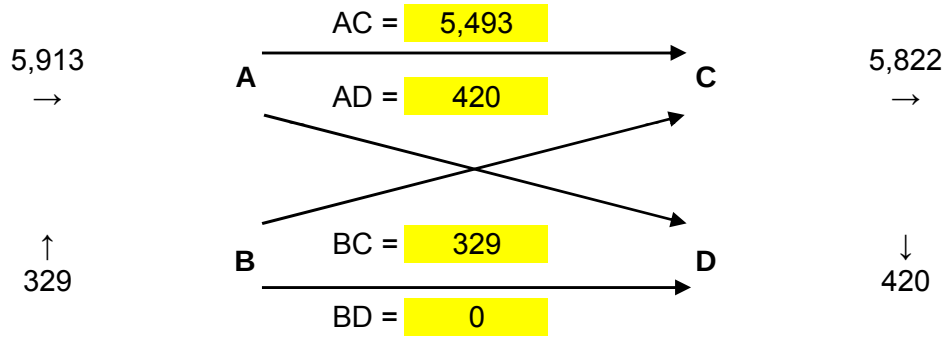


Number of Lane Change by Weaving Movements:

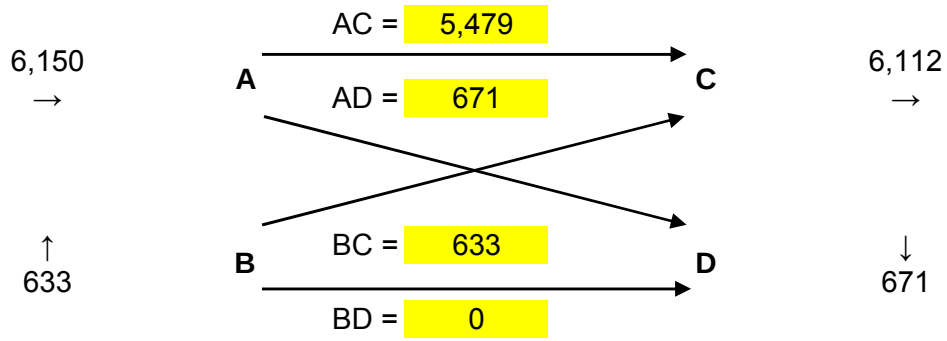
V_{w1}= 0 V_{w2}= 0

Per HCM Exhibit 24-5, Weave Configuration Type = **B**

2009 AM Peak Hour Traffic



2009 PM Peak Hour Traffic



FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroad, Inc.
Date Performed	8/10/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	Existing 2009

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.12
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.44
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5493	0.92	11	0	1.5	1.2	0.948	1.00	6299
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	420	0.92	11	0	1.5	1.2	0.948	1.00	481
V_{w2}	329	0.92	11	0	1.5	1.2	0.948	1.00	377
V_w				858	V_{nw}				6299
V									7157

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.52	0.21		
Weaving and non-weaving speeds, Si (mi/h)	51.23	60.63		

Number of lanes required for unconstrained operation, Nw 0.34
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	59.32
Weaving segment density, D (pc/mi/ln)	40.21
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroad, Inc.
Date Performed	8/10/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	Existing 2009

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.19
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.49
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5479	0.92	11	0	1.5	1.2	0.948	1.00	6282
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	671	0.92	11	0	1.5	1.2	0.948	1.00	769
V_{w2}	633	0.92	11	0	1.5	1.2	0.948	1.00	725
V_w				1494	V_{nw}				6282
V									7776

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.63	0.32		
Weaving and non-weaving speeds, Si (mi/h)	48.74	56.52		

Number of lanes required for unconstrained operation, Nw 0.58
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	54.84
Weaving segment density, D (pc/mi/ln)	47.27
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{up} = 1600 ft

V_u = 420 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5822	0.92	Level	11	0	0.948	1.00	6676
Ramp	172	0.92	Level	11	0	0.948	1.00	197
UpStream	420	0.92	Level	11	0	0.948	1.00	482
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1076.62 (Equation 25-2 or 25-3)

P_{FM} = 0.589 using Equation (Exhibit 25-5)

V_{12} = 3930 pc/h

V_3 or V_{av34} 2746 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = 3976 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	6873	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4173	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 35.4 (pc/mi/ln)

LOS = E (Exhibit 25-4)

Speed Determination

M_S = 0.546 (Exibit 25-19)

S_R = 52.4 mph (Exhibit 25-19)

S_0 = 56.1 mph (Exhibit 25-19)

S = 53.8 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R = mph (Exhibit 25-19)

S_0 = mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{up} = 1600 ft

V_u = 671 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6112	0.92	Level	11	0	0.948	1.00	7009
Ramp	430	0.92	Level	11	0	0.948	1.00	493
UpStream	671	0.92	Level	11	0	0.948	1.00	769
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1211.23 (Equation 25-2 or 25-3)

P_{FM} = 0.589 using Equation (Exhibit 25-5)

V_{12} = 4126 pc/h

V_3 or V_{av34} 2883 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = 4309 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7502	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4802	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 40.2 (pc/mi/ln)

LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.768 (Exibit 25-19)

S_R = 47.3 mph (Exhibit 25-19)

S_0 = 56.1 mph (Exhibit 25-19)

S = 50.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R = mph (Exhibit 25-19)

S_0 = mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 446 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6033	0.92	Level	11	0	0.948	1.00	6918
Ramp	654	0.92	Level	11	0	0.948	1.00	750
UpStream	446	0.92	Level	11	0	0.948	1.00	511
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1335.55 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 4111 pc/h
V_3 or V_{av34} 2807 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4218 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7668	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4968	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 40.1 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.840 (Exibit 25-19)
S_R= 45.7 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 48.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 206 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5546	0.92	Level	11	0	0.948	1.00	6360
Ramp	280	0.92	Level	11	0	0.948	1.00	321
UpStream	206	0.92	Level	11	0	0.948	1.00	236
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1124.33 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 3780 pc/h
V_3 or V_{av34} 2580 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	6681	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4101	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 33.6 (pc/mi/ln)
LOS = D (Exhibit 25-4)

Speed Determination

M_S = 0.515 (Exibit 25-19)
S_R= 53.2 mph (Exhibit 25-19)
S_0= 56.8 mph (Exhibit 25-19)
S = 54.5 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 654 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6479	0.92	Level	11	0	0.948	1.00	7430
Ramp	446	0.92	Level	11	0	0.948	1.00	511
UpStream								
DownStream	654	0.92	Level	11	0	0.948	1.00	750

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 5824.62 (Equation 25-8 or 25-9)
P_{FD} = 0.551 using Equation (Exhibit 25-12)
V_{12} = 4322 pc/h
V_3 or V_{av34} 3108 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4730 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7430	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	6919	Exhibit 25-14	7050	No
V_R	511	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4322	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 43.1 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.474 (Exhibit 25-19)
S_R= 54.1 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.5 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp	Terrain: Level	Downstream Adj Ramp
☐ Yes ☐ On		☑ Yes ☑ On
☑ No ☐ Off		☐ No ☐ Off
L_{up} = ft		L_{down} = 2300 ft
V_u = veh/h	S_{FF} = 65.0 mph S_{FR} = 35.0 mph Sketch (show lanes, L_A, L_D,V_R,V_f)	V_D = 280 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5752	0.92	Level	11	0	0.948	1.00	6596
Ramp	206	0.92	Level	11	0	0.948	1.00	236
UpStream								
DownStream	280	0.92	Level	11	0	0.948	1.00	321

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = 3206.10 (Equation 25-8 or 25-9)

P_{FD} = 0.584 using Equation (Exhibit 25-12)

V_{12} = 3952 pc/h

V_3 or V_{av34} 2644 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	6596	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	6360	Exhibit 25-14	7050	No
V_R	236	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3952	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 36.4 (pc/mi/ln)

LOS = E (Exhibit 25-4)

Speed Determination

D_s = 0.449 (Exhibit 25-19)

S_R= 54.7 mph (Exhibit 25-19)

S_0= 64.9 mph (Exhibit 25-19)

S = 58.4 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 146 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5496	0.92	Level	11	0	0.948	1.00	6302
Ramp	983	0.92	Level	11	0	0.948	1.00	1127
UpStream	146	0.92	Level	11	0	0.948	1.00	167
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1195.61 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 3710 pc/h
V_3 or V_{av34} 2592 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7429	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4837	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 40.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.785 (Exibit 25-19)
S_R= 47.0 mph (Exhibit 25-19)
S_0= 56.7 mph (Exhibit 25-19)
S = 50.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{up} = 2000 ft

V_u = 300 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5188	0.92	Level	11	0	0.948	1.00	5949
Ramp	564	0.92	Level	11	0	0.948	1.00	647
UpStream	300	0.92	Level	11	0	0.948	1.00	344
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1017.34 (Equation 25-2 or 25-3)

P_{FM} = 0.589 using Equation (Exhibit 25-5)

V_{12} = 3502 pc/h

V_3 or V_{av34} 2447 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	6596	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4149	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 35.0 (pc/mi/ln)

LOS = E (Exhibit 25-4)

Speed Determination

M_S = 0.540 (Exibit 25-19)

S_R = 52.6 mph (Exhibit 25-19)

S_0 = 57.6 mph (Exhibit 25-19)

S = 54.3 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R = mph (Exhibit 25-19)

S_0 = mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing 2009

Project Description

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 983 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5642	0.92	Level	11	0	0.948	1.00	6470
Ramp	146	0.92	Level	11	0	0.948	1.00	167
UpStream								
DownStream	983	0.92	Level	11	0	0.948	1.00	1127

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.591 using Equation (Exhibit 25-12)
V_{12} = 3889 pc/h
V_3 or V_{av34} 2581 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	6470	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	6303	Exhibit 25-14	7050	No
V_R	167	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3889	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 35.9 (pc/mi/ln)
LOS = E (Exhibit 25-4)

Speed Determination

D_s = 0.443 (Exhibit 25-19)
S_R= 54.8 mph (Exhibit 25-19)
S_0= 65.1 mph (Exhibit 25-19)
S = 58.5 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroad, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	8/10/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing 2009
Project Description			

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 564 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5488	0.92	Level	11	0	0.948	1.00	6293
Ramp	300	0.92	Level	11	0	0.948	1.00	344
UpStream								
DownStream	564	0.92	Level	11	0	0.948	1.00	647

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.587 using Equation (Exhibit 25-12)
V_{12} = 3835 pc/h
V_3 or V_{av34} 2458 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	6293	Exhibit 25-14	7050	No
$V_{FO} = V_F - V_R$	5949	Exhibit 25-14	7050	No
V_R	344	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3835	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 35.4 (pc/mi/ln)
LOS = E (Exhibit 25-4)

Speed Determination

D_s = 0.459 (Exhibit 25-19)
S_R= 54.4 mph (Exhibit 25-19)
S_0= 65.6 mph (Exhibit 25-19)
S = 58.3 mph (Exhibit 25-15)

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APPENDIX 5.1

Future Conditions
Traffic Signal Warrant Analysis Worksheets

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS			**2014 No Proj**
				CALC	CH	DATE	03/17/11
Jurisdiction:	**Riverside County**			CHK	CH	DATE	03/17/11
Major Street:	**Masters Dr.**			Critical Approach Speed (Major)			35 mph
Minor Street:	**Bennett Av.**			Critical Approach Speed (Minor)			25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **6,050** vpd Minor Street Future ADT = **750** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
XX					
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **6,050**	*1* **750**	8,000	5,600	2,400	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
	XX				
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1 **6,050**	*1* **750**	12,000	8,400	1,200	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,000	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
	XX				
No one condition satisfied, but following conditions fulfilled 80% of more …..		2 CONDITIONS 80%		2 CONDITIONS 80%	
A	**B**				
31%	**50%**				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS			**2014 No Proj**
				CALC	CH	DATE	03/17/11
				CHK	CH	DATE	03/17/11

Jurisdiction: **Riverside County**
Major Street: **Bedford Cyn. Rd.** — Critical Approach Speed (Major) 40 mph
Minor Street: **Georgetown Dr.** — Critical Approach Speed (Minor) 25 mph

Major Street Approach Lanes = **1** lane — Minor Street Approach Lanes **1** lane

Major Street Future ADT = **7,050** vpd — Minor Street Future ADT = **1,150** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……..

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **7,050** / *1* **1,150**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **7,050** / *1* **1,150**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,000	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied (XX)	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 48% B: 59%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2014 + Proj
				CALC CH DATE 03/17/11	
				CHK CH DATE 03/17/11	

Jurisdiction: **Riverside County**
Major Street: **Masters Dr.** — Critical Approach Speed (Major) 35 mph
Minor Street: **Bennett Av.** — Critical Approach Speed (Minor) 25 mph

Major Street Approach Lanes = **1** lane — Minor Street Approach Lanes **1** lane

Major Street Future ADT = **7,850** vpd — Minor Street Future ADT = **750** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……..

URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach	Urban	Rural	Urban	Rural
Major Street / Minor Street				
1 **7,850** / 1 **750**	8,000	5,600	2,400	1,680
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach	Urban	Rural	Urban	Rural
Major Street / Minor Street				
1 **7,850** / 1 **750**	12,000	8,400	1,200	850
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,000	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied (XX)	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A 31% B 63%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		2014 + Proj
				CALC CH	DATE	03/17/11
Jurisdiction: Riverside County				CHK CH	DATE	03/17/11
Major Street: Bedford Cyn. Rd.				Critical Approach Speed (Major)		40 mph
Minor Street: Georgetown Dr.				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **7,900** vpd Minor Street Future ADT = **1,250** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
XX	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **7,900** / *1* **1,250**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **7,900** / *1* **1,250**	12,000	8,400	1,200 *	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,000	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied XX				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A 52% B 66%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		2014 + Proj
				CALC CH	DATE	03/17/11
Jurisdiction: Riverside County				CHK CH	DATE	03/17/11
Major Street: Eagle Glen Pkwy.				Critical Approach Speed (Major)		45 mph
Minor Street: St. C				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **2** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **11,600** vpd Minor Street Future ADT = **2,650** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……..

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	*1*	8,000	5,600	2,400	1,680
2 + **11,600**	*1* **2,650**	9,600	6,720 *	2,400	1,680 *
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied				
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street	Urban	Rural	Urban	Rural
1	*1*	12,000	8,400	1,200	850
2 + **11,600**	*1* **2,650**	14,400	10,080 *	1,200	850 *
2 +	*2* +	14,000	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
XX		2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	A / B				
	100% / 100%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2014 + Proj
				CALC CH DATE	03/17/11
				CHK CH DATE	03/17/11

Jurisdiction: **Riverside County**
Major Street: **St. C** — Critical Approach Speed (Major) 45 mph
Minor Street: **St. B** — Critical Approach Speed (Minor) 25 mph

Major Street Approach Lanes = **1** lane — Minor Street Approach Lanes **1** lane

Major Street Future ADT = **3,000** vpd — Minor Street Future ADT = **2,300** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or

In built up area of isolated community of < 10,000 population …….. [ ]

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **3,000** / *1* **2,300**	8,000	5,600	2,400	1,680 *
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **3,000** / *1* **2,300**	12,000	8,400	1,200	850 *
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,000	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A 54% B 36%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		2014 + Proj
				CALC CH	DATE	03/17/11
Jurisdiction: Riverside County				CHK CH	DATE	03/17/11
Major Street: St. A				Critical Approach Speed (Major)		45 mph
Minor Street: Dwy. 1				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **5,550** vpd Minor Street Future ADT = **850** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or

In built up area of isolated community of < 10,000 population …….. [ ]

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Number of lanes for moving traffic on each approach: Major Street	Minor Street	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches) Urban	Rural	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only) Urban	Rural
CONDITION A - Minimum Vehicular Volume						
Satisfied / Not Satisfied XX						
	1 **5,550**	1 **850**	8,000	5,600	2,400	1,680
	2 +	1	9,600	6,720	2,400	1,680
	2 +	2 +	9,600	6,720	3,200	2,240
	1	2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic						
Satisfied / Not Satisfied XX						
	1 **5,550**	1 **850**	12,000	8,400	1,200	850 *
	2 +	1	14,400	10,080	1,200	850
	2 +	2 +	14,000	10,080	1,600	1,120
	1	2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B						
Satisfied / Not Satisfied XX			2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** 51%	**B** 66%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	**2019 No Proj**
				CALC CH	DATE 03/17/11
Jurisdiction: **Riverside County**				CHK CH	DATE 03/17/11
Major Street: **Masters Dr.**				Critical Approach Speed (Major)	35 mph
Minor Street: **Bennett Av.**				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **6,500** vpd Minor Street Future ADT = **750** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……..

URBAN (U)

(Based on Estimated Average Daily Traffic - See Note)

URBAN XX RURAL

CONDITION A - Minimum Vehicular Volume

Satisfied Not Satisfied XX

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches) Urban	Rural	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only) Urban	Rural
1 **6,500**	*1* **750**	8,000	5,600	2,400	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied Not Satisfied XX

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles Per Day on Major Street (Total of Both Approaches) Urban	Rural	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only) Urban	Rural
1 **6,500**	*1* **750**	12,000	8,400	1,200	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,000	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120

Combination of CONDITIONS A + B

Satisfied Not Satisfied XX

No one condition satisfied, but following conditions fulfilled 80% of more ….. A 31% B 54%

2 CONDITIONS 80%

2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2019 No Proj
				CALC CH	DATE 03/17/11
Jurisdiction: Riverside County				CHK CH	DATE 03/17/11
Major Street: Bedford Cyn. Rd.				Critical Approach Speed (Major)	40 mph
Minor Street: Georgetown Dr.				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **8,350** vpd Minor Street Future ADT = **1,200** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 **8,350** / *1* **1,200**	8,000 *	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 **8,350** / *1* **1,200**	12,000	8,400	1,200 *	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,000	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied (XX)				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 50% B: 70%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2019 + Proj
				CALC CH	DATE 03/17/11
Jurisdiction: Riverside County				CHK CH	DATE 03/17/11
Major Street: Masters Dr.				Critical Approach Speed (Major)	35 mph
Minor Street: Bennett Av.				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **9,900** vpd Minor Street Future ADT = **750** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
XX	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume	Urban	Rural	Urban	Rural
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **9,900** / *1* **750**	8,000 *	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **9,900** / *1* **750**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,000	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 31% B: 63%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2019 + Proj
				CALC CH DATE	03/17/11
				CHK CH DATE	03/17/11

Jurisdiction: **Riverside County**
Major Street: **Bedford Cyn. Rd.** — Critical Approach Speed (Major) 40 mph
Minor Street: **Georgetown Dr.** — Critical Approach Speed (Minor) 25 mph

Major Street Approach Lanes = **1** lane — Minor Street Approach Lanes **1** lane

Major Street Future ADT = **11,000** vpd — Minor Street Future ADT = **1,350** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……..

or

In built up area of isolated community of < 10,000 population ……..

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN XX — RURAL

CONDITION A - Minimum Vehicular Volume

Satisfied — Not Satisfied XX

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches) Urban	Rural	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only) Urban	Rural
1 **11,000**	*1* **1,350**	8,000 *	5,600	2,400	1,680
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240

CONDITION B - Interruption of Continuous Traffic

Satisfied — Not Satisfied XX

Number of lanes for moving traffic on each approach

Major Street	Minor Street	Vehicles Per Day on Major Street (Total of Both Approaches) Urban	Rural	Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only) Urban	Rural
1 **11,000**	*1* **1,350**	12,000	8,400	1,200 *	850
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,000	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120

Combination of CONDITIONS A + B

Satisfied — Not Satisfied XX

No one condition satisfied, but following conditions fulfilled 80% of more ….. A 56% B 92%

2 CONDITIONS 80% — 2 CONDITIONS 80%

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

___ DIST	___ CO	___ RTE	___ PM	TRAFFIC CONDITIONS		**2019 + Proj**
				CALC CH	DATE	03/17/11
Jurisdiction: **Riverside County**				CHK CH	DATE	03/17/11
Major Street: **St. C**				Critical Approach Speed (Major)		45 mph
Minor Street: **St. B**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **4,000** vpd Minor Street Future ADT = **2,450** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or

In built up area of isolated community of < 10,000 population …….. [ ]

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **4,000** / *1* **2,450**	8,000	5,600	2,400	1,680 *
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **4,000** / *1* **2,450**	12,000	8,400	1,200	850 *
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,000	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A 71% B 48%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS		**2019 + Proj**
				CALC CH	DATE	03/17/11
Jurisdiction: **Riverside County**				CHK CH	DATE	03/17/11
Major Street: **St. A**				Critical Approach Speed (Major)		45 mph
Minor Street: **Dwy. 1**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **18,600** vpd Minor Street Future ADT = **4,150** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……..

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN	RURAL	Minimum Requirements EADT			
	XX				
CONDITION A - Minimum Vehicular Volume		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied	Urban	Rural	Urban	Rural
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street				
1 **18,600**	*1* **4,150**	8,000	5,600 *	2,400	1,680 *
2 +	*1*	9,600	6,720	2,400	1,680
2 +	*2* +	9,600	6,720	3,200	2,240
1	*2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic		Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied	Not Satisfied	Urban	Rural	Urban	Rural
XX					
Number of lanes for moving traffic on each approach					
Major Street	Minor Street				
1 **18,600**	*1* **4,150**	12,000	8,400 *	1,200	850 *
2 +	*1*	14,400	10,080	1,200	850
2 +	*2* +	14,000	10,080	1,600	1,120
1	*2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B					
Satisfied	Not Satisfied				
XX		2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	A / B				
	100% / 100%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet
(Average Traffic Estimate Form)

___ DIST	___ CO	___ RTE	___ PM	TRAFFIC CONDITIONS	**2019 + Proj**
				CALC CH	DATE 03/17/11
Jurisdiction: **Riverside County**				CHK CH	DATE 03/17/11
Major Street: **St. A**				Critical Approach Speed (Major)	45 mph
Minor Street: **St. B**				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **8,750** vpd Minor Street Future ADT = **3,600** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); ……... [√]

or

In built up area of isolated community of < 10,000 population …….. [ ]

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied: XX (RURAL: XX) / Not Satisfied	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 **8,750** / 1 **3,600**	8,000	5,600 *	2,400	1,680 *
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied: XX / Not Satisfied	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 **8,750** / 1 **3,600**	12,000	8,400 *	1,200	850 *
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,000	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied: XX / Not Satisfied	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 100% B: 100%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2019 No Proj
				CALC CH	DATE 03/17/11
Jurisdiction: Riverside County				CHK CH	DATE 03/17/11
Major Street: Masters Dr.				Critical Approach Speed (Major)	35 mph
Minor Street: Bennett Av.				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **8,100** vpd Minor Street Future ADT = **900** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume	Urban	Rural	Urban	Rural
Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street: 1 **8,100** / Minor Street: 1 **900**	8,000 *	5,600	2,400	1,680
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street: 1 **8,100** / Minor Street: 1 **900**	12,000	8,400	1,200	850
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,000	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 38% B: 68%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM		TRAFFIC CONDITIONS		2035 No Proj
				CALC	CH	DATE	03/17/11
Jurisdiction:	Riverside County			CHK	CH	DATE	03/17/11
Major Street:	Bedford Cyn. Rd.				Critical Approach Speed (Major)		40 mph
Minor Street:	Georgetown Dr.				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **14,350** vpd Minor Street Future ADT = **1,400** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **RURAL (R)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Number of lanes for moving traffic on each approach		Minimum Requirements EADT			
			Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Major Street	Minor Street	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume						
Satisfied: Not Satisfied XX	*1* **14,350**	*1* **1,400**	8,000 *	5,600	2,400	1,680
	2 +	*1*	9,600	6,720	2,400	1,680
	2 +	*2* +	9,600	6,720	3,200	2,240
	1	*2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic						
Satisfied XX / Not Satisfied			Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Major Street	Minor Street	Urban	Rural	Urban	Rural
	1 **14,350**	*1* **1,400**	12,000 *	8,400	1,200 *	850
	2 +	*1*	14,400	10,080	1,200	850
	2 +	*2* +	14,000	10,080	1,600	1,120
	1	*2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B						
Satisfied / Not Satisfied XX			2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more …..	**A** 58%	**B** 100%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2035 + Proj
				CALC CH	DATE 03/17/11
Jurisdiction: Riverside County				CHK CH	DATE 03/17/11
Major Street: Masters Dr.				Critical Approach Speed (Major)	35 mph
Minor Street: Bennett Av.				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **11,500** vpd Minor Street Future ADT = **900** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **11,500** / 1 **900**	8,000 *	5,600	2,400	1,680
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **11,500** / 1 **900**	12,000	8,400	1,200	850
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,000	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied (XX)	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 38% B: 75%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

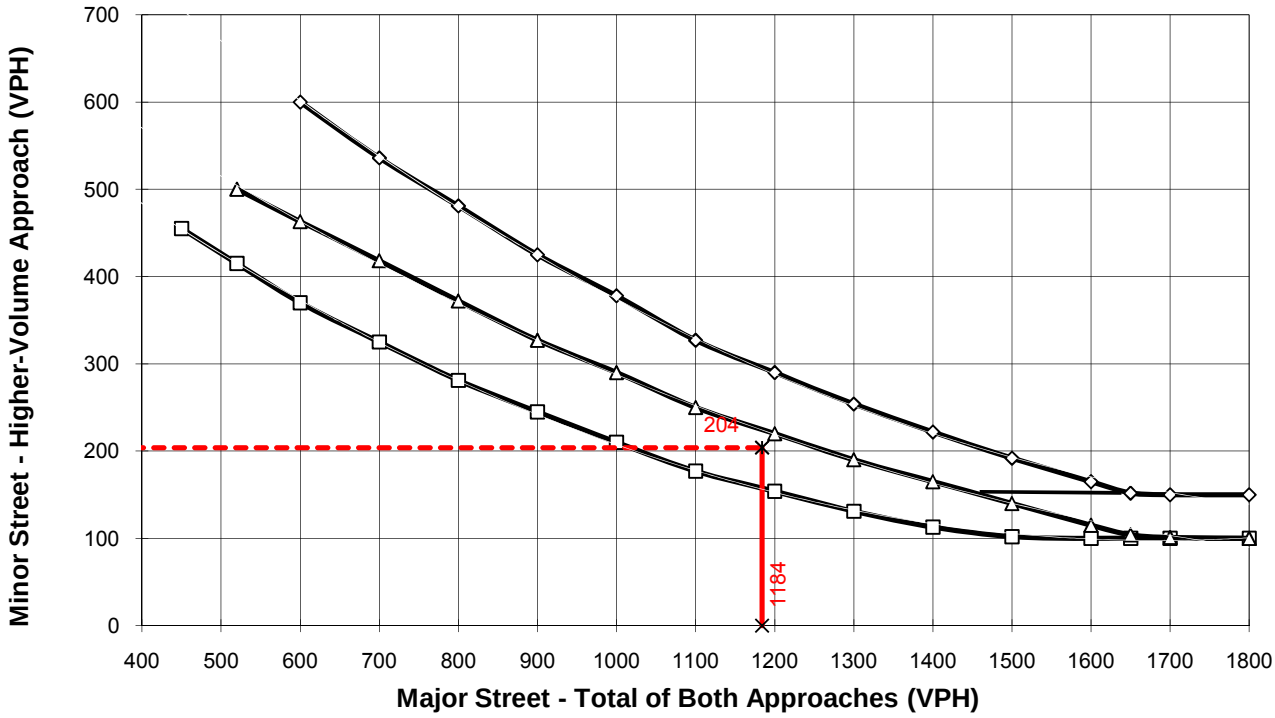
Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **2035 + Project**

Major Street Name = **Masters Drive**
Total of Both Approaches (VPH) = **1184**
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Bennett Avenue**
High Volume Approach (VPH) = **204**
Number of Approach Lanes On Minor Street = **1**

WARRANTED FOR A SIGNAL



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

DIST	CO	RTE	PM	TRAFFIC CONDITIONS	2035 + Proj
				CALC CH	DATE 03/17/11
Jurisdiction: Riverside County				CHK CH	DATE 03/17/11
Major Street: St. C				Critical Approach Speed (Major)	45 mph
Minor Street: St. B				Critical Approach Speed (Minor)	25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes = **1** lane

Major Street Future ADT = **4,000** vpd Minor Street Future ADT = **2,450** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. √

or

In built up area of isolated community of < 10,000 population ……..

RURAL (R)

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT: Vehicles Per Day on Major Street (Total of Both Approaches)		Minimum Requirements EADT: Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
	Urban	Rural	Urban	Rural
CONDITION A - Minimum Vehicular Volume				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 **4,000** / 1 **2,450**	8,000	5,600	2,400	1,680 *
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic				
Satisfied / Not Satisfied (XX)				
Number of lanes for moving traffic on each approach: Major Street / Minor Street				
1 **4,000** / 1 **2,450**	12,000	8,400	1,200	850 *
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,000	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied (XX)				
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 71% B: 48%	2 CONDITIONS 80%		2 CONDITIONS 80%	

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

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APPENDIX 5.2

2014 Without Project Conditions
Intersection Operations Analysis Worksheets

Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.255
Loss Time (sec):	0	Average Delay (sec/veh):	63.5
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1
Volume Module:																
Base Vol:	92	234	270	177	139	3		4	150	85	131	82	149			
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00			
Initial Bse:	92	234	270	177	139	3		4	150	85	131	82	149			
Added Vol:	-12	-8	-44	0	-21	0		0	0	-22	-23	0	0			
PasserByVol:	0	0	0	0	0	0		0	0	0	0	0	0			
Initial Fut:	80	226	226	177	118	3		4	150	63	108	82	149			
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00			
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76		0.76	0.76	0.76	0.76	0.76	0.76			
PHF Volume:	106	299	299	234	156	4		5	199	83	143	109	197			
Reduct Vol:	0	0	0	0	0	0		0	0	0	0	0	0			
Reduced Vol:	106	299	299	234	156	4		5	199	83	143	109	197			
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00			
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00			
FinalVolume:	106	299	299	234	156	4		5	199	83	143	109	197			
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00			
Lanes:	1.00	0.50	0.50	1.00	0.98	0.02		1.00	0.70	0.30	1.00	1.00	1.00			
Final Sat.:	420	239	239	404	416	11		387	299	125	374	394	428			
Capacity Analysis Module:																
Vol/Sat:	0.25	1.25	1.25	0.58	0.38	0.38		0.01	0.66	0.66	0.38	0.28	0.46			
Crit Moves:		****		****						****			****			
Delay/Veh:	13.8	154	154.4	22.5	15.6	15.6		11.9	25.4	25.4	17.7	14.9	17.5			
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00			
AdjDel/Veh:	13.8	154	154.4	22.5	15.6	15.6		11.9	25.4	25.4	17.7	14.9	17.5			
LOS by Move:	B	F	F	C	C	C		B	D	D	C	B	C			
ApproachDel:	133.3			19.7				25.2			16.9					
Delay Adj:	1.00			1.00				1.00			1.00					
ApprAdjDel:	133.3			19.7				25.2			16.9					
LOS by Appr:	F			C				D			C					
AllWayAvgQ:	0.3	19.1	19.1	1.2	0.6	0.6		0.0	1.7	1.7	0.6	0.4	0.8			

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.623
Loss Time (sec):	8	Average Delay (sec/veh):	13.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Permitted				Permitted				Permitted				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	15	15		15	15	15		15	15	15		15	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1
Volume Module:																
Base Vol:	92	234	270		177	139	3		4	150	85		131	82	149	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	92	234	270		177	139	3		4	150	85		131	82	149	
Added Vol:	-12	-8	-44		0	-21	0		0	0	-22		-23	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	80	226	226		177	118	3		4	150	63		108	82	149	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.76	0.76	0.76		0.76	0.76	0.76		0.76	0.76	0.76		0.76	0.76	0.76	
PHF Volume:	106	299	299		234	156	4		5	199	83		143	109	197	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	106	299	299		234	156	4		5	199	83		143	109	197	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	106	299	299		234	156	4		5	199	83		143	109	197	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.65	0.93	0.93		0.34	1.00	1.00		0.68	0.96	0.96		0.44	1.00	0.85	
Lanes:	1.00	0.50	0.50		1.00	0.98	0.02		1.00	0.70	0.30		1.00	1.00	1.00	
Final Sat.:	1233	879	879		637	1845	47		1298	1279	537		832	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.09	0.34	0.34		0.37	0.08	0.08		0.00	0.16	0.16		0.17	0.06	0.12	
Crit Moves:					****								****			
Green/Cycle:	0.59	0.59	0.59		0.59	0.59	0.59		0.28	0.28	0.28		0.28	0.28	0.28	
Volume/Cap:	0.15	0.58	0.58		0.62	0.14	0.14		0.01	0.56	0.56		0.62	0.21	0.44	
Delay/Veh:	5.6	8.4	8.4		11.2	5.5	5.5		15.8	20.1	20.1		24.2	16.9	18.6	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	5.6	8.4	8.4		11.2	5.5	5.5		15.8	20.1	20.1		24.2	16.9	18.6	
LOS by Move:	A	A	A		B	A	A		B	C	C		C	B	B	
HCM2kAvgQ:	1	8	8		4	1	1		0	5	5		4	2	3	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.210
Loss Time (sec):	0	Average Delay (sec/veh):	8.5
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	6	181	12	22	218	10	41	8	23	11	2	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	181	12	22	218	10	41	8	23	11	2	30
Added Vol:	0	-68	0	0	-83	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	113	12	22	135	10	41	8	23	11	2	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	119	13	23	142	11	43	8	24	12	2	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	119	13	23	142	11	43	8	24	12	2	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	119	13	23	142	11	43	8	24	12	2	32
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	0.93	0.07	0.57	0.11	0.32	0.25	0.05	0.70
Final Sat.:	650	655	70	656	678	50	419	82	235	197	36	538
Capacity Analysis Module:												
Vol/Sat:	0.01	0.18	0.18	0.04	0.21	0.21	0.10	0.10	0.10	0.06	0.06	0.06
Crit Moves:		****			****			****			****	
Delay/Veh:	8.2	8.6	8.6	8.3	8.8	8.8	8.1	8.1	8.1	7.6	7.6	7.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.6	8.6	8.3	8.8	8.8	8.1	8.1	8.1	7.6	7.6	7.6
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.6			8.7			8.1			7.6	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.6			8.7			8.1			7.6	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.2	0.2	0.0	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec): 0 Critical Vol./Cap.(X): 0.313
Loss Time (sec): 0 Average Delay (sec/veh): 10.7
Optimal Cycle: 0 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	176	0	68	41	514	0	0	394	143
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	176	0	68	41	514	0	0	394	143
Added Vol:	0	0	0	-24	0	-59	-34	-216	0	0	-111	-34
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	152	0	9	7	298	0	0	283	109
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	160	0	9	7	314	0	0	298	115
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	160	0	9	7	314	0	0	298	115
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	160	0	9	7	314	0	0	298	115
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.44	0.56
Final Sat.:	0	0	0	516	0	617	541	1180	0	0	953	386
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.31	xxxx	0.02	0.01	0.27	xxxx	xxxx	0.31	0.30
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	12.1	0.0	8.2	9.2	10.7	0.0	0.0	10.3	9.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	12.1	0.0	8.2	9.2	10.7	0.0	0.0	10.3	9.8
LOS by Move:	*	*	*	B	*	A	A	B	*	*	B	A
ApproachDel:	xxxxxx			11.9			10.7			10.2		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			11.9			10.7			10.2		
LOS by Appr:	*			B			B			B		
AllWayAvgQ:	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.3	0.0	0.0	0.4	0.4

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.424
Loss Time (sec): 12 Average Delay (sec/veh): 17.0
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	191	0	140	0	0	0	0	797	80	59	754	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	191	0	140	0	0	0	0	797	80	59	754	0
Added Vol:	-12	0	-14	0	0	0	0	0	-22	-15	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	179	0	126	0	0	0	0	797	58	44	754	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	188	0	133	0	0	0	0	839	61	46	794	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	188	0	133	0	0	0	0	839	61	46	794	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	188	0	133	0	0	0	0	839	61	46	794	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.94	0.94	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.86	0.14	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3331	242	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.10	0.00	0.08	0.00	0.00	0.00	0.00	0.25	0.25	0.03	0.22	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.24	0.00	0.24	0.00	0.00	0.00	0.00	0.58	0.58	0.08	0.66	0.00
Volume/Cap:	0.44	0.00	0.34	0.00	0.00	0.00	0.00	0.44	0.44	0.31	0.33	0.00
Delay/Veh:	39.5	0.0	38.4	0.0	0.0	0.0	0.0	14.5	14.5	52.9	8.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.5	0.0	38.4	0.0	0.0	0.0	0.0	14.5	14.5	52.9	8.9	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	6	0	4	0	0	0	0	10	10	2	7	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.221
Loss Time (sec):	0	Average Delay (sec/veh):	8.8
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0	1! 0 0
Volume Module:												
Base Vol:	19	173	6	6	120	31	82	3	44	1	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	19	173	6	6	120	31	82	3	44	1	1	1
Added Vol:	-3	-26	0	0	-37	0	0	0	-12	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	16	147	6	6	83	31	82	3	32	1	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	17	155	6	6	87	33	86	3	0	1	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	17	155	6	6	87	33	86	3	0	1	1	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	17	155	6	6	87	33	86	3	0	1	1	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.07	0.93	1.00	0.96	0.04	1.00	0.34	0.33	0.33
Final Sat.:	636	701	808	48	662	830	584	21	752	217	217	217
Capacity Analysis Module:												
Vol/Sat:	0.03	0.22	0.01	0.13	0.13	0.04	0.15	0.15	0.00	0.00	0.00	0.00
Crit Moves:		****			****			****			****	
Delay/Veh:	8.4	9.1	7.1	8.4	8.4	7.1	9.3	9.3	0.0	8.2	8.2	8.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	9.1	7.1	8.4	8.4	7.1	9.3	9.3	0.0	8.2	8.2	8.2
LOS by Move:	A	A	A	A	A	A	A	A	*	A	A	A
ApproachDel:	9.0			8.0			9.3			8.2		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.0			8.0			9.3			8.2		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.0	0.3	0.0	0.1	0.1	0.0	0.2	0.2	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.212
Loss Time (sec): 12 Average Delay (sec/veh): 18.4
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	1	0 1	0	1	0 1	1	0	0 1 1 0 1
Volume Module:												
Base Vol:	34	29	150	118	49	68	37	630	24	249	434	72
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	34	29	150	118	49	68	37	630	24	249	434	72
Added Vol:	-34	-29	-150	0	-49	0	0	-216	-24	-249	-111	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	118	0	68	37	414	0	0	323	72
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	124	0	72	39	436	0	0	340	76
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	124	0	72	39	436	0	0	340	76
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	124	0	72	39	436	0	0	340	76
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.87	0.95	0.87	0.95	0.95	0.95	0.95	0.95	0.85
Lanes:	0.00	1.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	1900	0	1653	0	1653	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.04	0.02	0.12	0.00	0.00	0.09	0.05
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.35	0.00	0.46	0.10	0.55	0.00	0.00	0.44	0.80
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.09	0.21	0.22	0.00	0.00	0.21	0.06
Delay/Veh:	0.0	0.0	0.0	27.2	0.0	18.6	50.1	14.1	0.0	0.0	20.5	2.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	27.2	0.0	18.6	50.1	14.1	0.0	0.0	20.5	2.6
LOS by Move:	A	A	A	C	A	B	D	B	A	A	C	A
HCM2kAvgQ:	0	0	0	3	0	2	1	4	0	0	4	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.551
Loss Time (sec): 12 Average Delay (sec/veh): 22.1
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	0	1 0	0 1	0	0 1	1 0	1	0 2	0 0
Volume Module:												
Base Vol:	0	0	0	100	0	236	0	661	274	104	585	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	100	0	236	0	661	274	104	585	0
Added Vol:	0	0	0	0	0	0	0	-14	0	0	-15	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	100	0	236	0	647	274	104	570	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	105	0	248	0	681	288	109	600	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	105	0	248	0	681	288	109	600	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	105	0	248	0	681	288	109	600	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.91	0.91	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.40	0.60	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2422	1026	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.15	0.00	0.28	0.28	0.06	0.17	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.28	0.00	0.28	0.00	0.51	0.51	0.11	0.62	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.55	0.00	0.55	0.55	0.55	0.27	0.00
Delay/Veh:	0.0	0.0	0.0	33.3	0.0	38.3	0.0	20.4	20.4	53.9	10.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.3	0.0	38.3	0.0	20.4	20.4	53.9	10.4	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	D	B	A
HCM2kAvgQ:	0	0	0	3	0	8	0	12	12	4	5	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.458
Loss Time (sec): 12 Average Delay (sec/veh): 25.7
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	244	0	401	191	707	0	0	437	89
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	244	0	401	191	707	0	0	437	89
Added Vol:	0	0	0	0	0	-196	-83	-284	0	0	-165	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	244	0	205	108	423	0	0	272	89
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	257	0	216	114	445	0	0	286	94
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	257	0	216	114	445	0	0	286	94
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	257	0	216	114	445	0	0	286	94
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.97	0.97
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.75	0.25
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1384	453
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.14	0.00	0.13	0.06	0.23	0.00	0.00	0.21	0.21
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.31	0.14	0.59	0.00	0.00	0.45	0.45
Volume/Cap:	0.00	0.00	0.00	0.46	0.00	0.43	0.46	0.40	0.00	0.00	0.46	0.46
Delay/Veh:	0.0	0.0	0.0	33.8	0.0	33.5	49.0	13.5	0.0	0.0	23.1	23.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.8	0.0	33.5	49.0	13.5	0.0	0.0	23.1	23.1
LOS by Move:	A	A	A	C	A	C	D	B	A	A	C	C
HCM2kAvgQ:	0	0	0	8	0	6	4	9	0	0	9	9

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.653
Loss Time (sec):	12	Average Delay (sec/veh):	35.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	361	0	120	0	0	0	465	281	0	0	312	222
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	361	0	120	0	0	0	465	281	0	0	312	222
Added Vol:	0	0	0	0	0	0	0	-14	0	0	-15	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	361	0	120	0	0	0	465	267	0	0	297	222
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	380	0	126	0	0	0	489	281	0	0	313	234
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	380	0	126	0	0	0	489	281	0	0	313	234
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	380	0	126	0	0	0	489	281	0	0	313	234
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.89	0.89
Lanes:	0.75	0.00	0.25	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.14	0.86
Final Sat.:	1328	0	441	0	0	0	3502	1900	0	0	1934	1445
Capacity Analysis Module:												
Vol/Sat:	0.29	0.00	0.29	0.00	0.00	0.00	0.14	0.15	0.00	0.00	0.16	0.16
Crit Moves:			****				****				****	
Green/Cycle:	0.44	0.00	0.44	0.00	0.00	0.00	0.21	0.46	0.00	0.00	0.25	0.25
Volume/Cap:	0.65	0.00	0.65	0.00	0.00	0.00	0.65	0.32	0.00	0.00	0.65	0.65
Delay/Veh:	28.5	0.0	28.5	0.0	0.0	0.0	45.2	20.6	0.0	0.0	42.4	42.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	28.5	0.0	28.5	0.0	0.0	0.0	45.2	20.6	0.0	0.0	42.4	42.4
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	15	0	15	0	0	0	8	6	0	0	10	10

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.772
Loss Time (sec):	12	Average Delay (sec/veh):	28.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	178	0	60	0	0	0	534	418	0	0	351	705
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	178	0	60	0	0	0	534	418	0	0	351	705
Added Vol:	-87	0	0	0	0	0	-221	-63	0	0	-78	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	91	0	60	0	0	0	313	355	0	0	273	705
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	96	0	63	0	0	0	329	374	0	0	287	742
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	96	0	63	0	0	0	329	374	0	0	287	742
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	96	0	63	0	0	0	329	374	0	0	287	742
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.00	0.04	0.00	0.00	0.00	0.18	0.20	0.00	0.00	0.15	0.46
Crit Moves:	****						****					****
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.22	0.78	0.00	0.00	0.55	0.55
Volume/Cap:	0.42	0.00	0.31	0.00	0.00	0.00	0.83	0.25	0.00	0.00	0.27	0.83
Delay/Veh:	49.8	0.0	48.7	0.0	0.0	0.0	58.1	3.9	0.0	0.0	14.2	28.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	49.8	0.0	48.7	0.0	0.0	0.0	58.1	3.9	0.0	0.0	14.2	28.5
LOS by Move:	D	A	D	A	A	A	E	A	A	A	B	C
HCM2kAvgQ:	4	0	2	0	0	0	12	4	0	0	5	23

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.259
Loss Time (sec): 12 Average Delay (sec/veh): 14.9
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	24	0	82	141	337	0	0	960	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	24	0	82	141	337	0	0	960	60
Added Vol:	0	0	0	0	0	-3	-11	-52	0	0	-75	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	24	0	79	130	285	0	0	885	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	25	0	83	137	300	0	0	932	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	25	0	83	137	300	0	0	932	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	25	0	83	137	300	0	0	932	63
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.01	0.00	0.03	0.04	0.08	0.00	0.00	0.18	0.04
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.30	0.13	0.73	0.00	0.00	0.60	0.60
Volume/Cap:	0.00	0.00	0.00	0.08	0.00	0.10	0.30	0.11	0.00	0.00	0.30	0.06
Delay/Veh:	0.0	0.0	0.0	42.4	0.0	30.5	47.5	4.7	0.0	0.0	11.6	9.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.4	0.0	30.5	47.5	4.7	0.0	0.0	11.6	9.9
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	A
HCM2kAvgQ:	0	0	0	1	0	1	2	2	0	0	6	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.637
Loss Time (sec):	16	Average Delay (sec/veh):	36.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	10	20	20		10	20	20		10	20	20		10	20	20	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0 1	0	1	1	0 1	1	0	1	0 1	0	1	1	0 2	1	0
Volume Module:																
Base Vol:	526	683	216		60	66	50		23	233	106		43	442	200	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	526	683	216		60	66	50		23	233	106		43	442	200	
Added Vol:	-23	0	0		0	0	-13		-6	-30	-16		0	-38	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	503	683	216		60	66	37		17	203	90		43	404	200	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	529	719	227		63	69	39		18	214	95		45	425	211	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	529	719	227		63	69	39		18	214	95		45	425	211	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	529	719	227		63	69	39		18	214	95		45	425	211	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.92	1.00	0.85		0.95	0.90	0.90		0.95	1.00	0.85		0.95	0.86	0.86	
Lanes:	2.00	1.00	1.00		1.00	1.28	0.72		1.00	1.00	1.00		1.00	2.01	0.99	
Final Sat.:	3502	1900	1615		1805	2188	1227		1805	1900	1615		1805	3296	1632	
Capacity Analysis Module:																
Vol/Sat:	0.15	0.38	0.14		0.03	0.03	0.03		0.01	0.11	0.06		0.03	0.13	0.13	
Crit Moves:		****				****				****				****		
Green/Cycle:	0.29	0.52	0.52		0.08	0.32	0.32		0.08	0.17	0.17		0.09	0.18	0.18	
Volume/Cap:	0.53	0.72	0.27		0.42	0.10	0.10		0.12	0.65	0.34		0.29	0.72	0.72	
Delay/Veh:	36.4	24.7	16.1		54.1	28.9	28.9		51.3	50.5	44.2		52.3	49.6	49.6	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	36.4	24.7	16.1		54.1	28.9	28.9		51.3	50.5	44.2		52.3	49.6	49.6	
LOS by Move:	D	C	B		D	C	C		D	D	D		D	D	D	
HCM2kAvgQ:	9	21	5		3	1	1		1	7	3		2	10	10	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.407
Loss Time (sec):	0	Average Delay (sec/veh):	11.5
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	85	90	158	29	107	1	3	74	151	243	96	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	85	90	158	29	107	1	3	74	151	243	96	18
Added Vol:	-24	-22	-35	0	-11	0	0	0	-15	-45	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	61	68	123	29	96	1	3	74	136	198	96	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	64	72	129	31	101	1	3	78	143	208	101	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	64	72	129	31	101	1	3	78	143	208	101	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	64	72	129	31	101	1	3	78	143	208	101	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.36	0.64	1.00	0.99	0.01	1.00	0.35	0.65	1.00	1.00	1.00
Final Sat.:	506	210	379	485	517	5	514	212	390	512	548	611
Capacity Analysis Module:												
Vol/Sat:	0.13	0.34	0.34	0.06	0.20	0.20	0.01	0.37	0.37	0.41	0.18	0.03
Crit Moves:			****		****			****		****		
Delay/Veh:	10.4	11.2	11.2	10.1	10.6	10.6	9.4	11.4	11.4	13.8	10.3	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.4	11.2	11.2	10.1	10.6	10.6	9.4	11.4	11.4	13.8	10.3	8.4
LOS by Move:	B	B	B	B	B	B	A	B	B	B	B	A
ApproachDel:	11.0			10.4			11.4			12.4		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	11.0			10.4			11.4			12.4		
LOS by Appr:	B			B			B			B		
AllWayAvgQ:	0.1	0.4	0.4	0.1	0.2	0.2	0.0	0.5	0.5	0.6	0.2	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.342
Loss Time (sec):	8	Average Delay (sec/veh):	10.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	85	90	158	29	107	1	3	74	151	243	96	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	85	90	158	29	107	1	3	74	151	243	96	18
Added Vol:	-24	-22	-35	0	-11	0	0	0	-15	-45	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	61	68	123	29	96	1	3	74	136	198	96	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	64	72	129	31	101	1	3	78	143	208	101	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	64	72	129	31	101	1	3	78	143	208	101	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	64	72	129	31	101	1	3	78	143	208	101	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.69	0.90	0.90	0.60	1.00	1.00	0.69	0.90	0.90	0.61	1.00	0.85
Lanes:	1.00	0.36	0.64	1.00	0.99	0.01	1.00	0.35	0.65	1.00	1.00	1.00
Final Sat.:	1307	611	1105	1131	1879	20	1309	605	1111	1165	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.05	0.12	0.12	0.03	0.05	0.05	0.00	0.13	0.13	0.18	0.05	0.01
Crit Moves:		****								****		
Green/Cycle:	0.34	0.34	0.34	0.34	0.34	0.34	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.14	0.34	0.34	0.08	0.16	0.16	0.00	0.25	0.25	0.34	0.10	0.02
Delay/Veh:	13.8	15.0	15.0	13.4	13.8	13.8	6.8	8.0	8.0	8.6	7.2	6.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.8	15.0	15.0	13.4	13.8	13.8	6.8	8.0	8.0	8.6	7.2	6.9
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	1	3	3	0	1	1	0	2	2	3	1	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.378
Loss Time (sec):	0	Average Delay (sec/veh):	9.6
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Include				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	1 0	0	1	0	1 0	0	1	0	0 0	1!	0	0	0 0	1!	0	0
Volume Module:																
Base Vol:	28	269	19		14	308	31		13	6	30		9	12	32	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	28	269	19		14	308	31		13	6	30		9	12	32	
Added Vol:	0	-97	0		0	-78	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	28	172	19		14	230	31		13	6	30		9	12	32	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	29	181	20		15	242	33		14	6	32		9	13	34	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	29	181	20		15	242	33		14	6	32		9	13	34	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	29	181	20		15	242	33		14	6	32		9	13	34	
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	0.90	0.10		1.00	0.88	0.12		0.27	0.12	0.61		0.17	0.23	0.60	
Final Sat.:	642	645	71		649	640	86		179	83	413		115	153	409	
Capacity Analysis Module:																
Vol/Sat:	0.05	0.28	0.28		0.02	0.38	0.38		0.08	0.08	0.08		0.08	0.08	0.08	
Crit Moves:		****				****				****				****		
Delay/Veh:	8.5	9.5	9.5		8.3	10.4	10.4		8.2	8.2	8.2		8.2	8.2	8.2	
Delay Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	8.5	9.5	9.5		8.3	10.4	10.4		8.2	8.2	8.2		8.2	8.2	8.2	
LOS by Move:	A	A	A		A	B	B		A	A	A		A	A	A	
ApproachDel:		9.4				10.3				8.2				8.2		
Delay Adj:		1.00				1.00				1.00				1.00		
ApprAdjDel:		9.4				10.3				8.2				8.2		
LOS by Appr:		A				B				A				A		
AllWayAvgQ:	0.0	0.4	0.4		0.0	0.6	0.6		0.1	0.1	0.1		0.1	0.1	0.1	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.560
Loss Time (sec):	0	Average Delay (sec/veh):	14.4
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	295	0	62	83	455	0	0	569	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	295	0	62	83	455	0	0	569	284
Added Vol:	0	0	0	-36	0	-42	-64	-166	0	0	-222	-32
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	259	0	20	19	289	0	0	347	252
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	273	0	21	20	304	0	0	365	265
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	273	0	21	20	304	0	0	365	265
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	273	0	21	20	304	0	0	365	265
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.16	0.84
Final Sat.:	0	0	0	487	0	572	468	1011	0	0	687	544
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.56	xxxx	0.04	0.04	0.30	xxxx	xxxx	0.53	0.49
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	18.0	0.0	8.9	10.4	12.4	0.0	0.0	15.0	13.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	18.0	0.0	8.9	10.4	12.4	0.0	0.0	15.0	13.0
LOS by Move:	*	*	*	C	*	A	B	B	*	*	B	B
ApproachDel:	xxxxxx			17.3			12.3			14.1		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			17.3			12.3			14.1		
LOS by Appr:	*			C			B			B		
AllWayAvgQ:	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.4	0.0	0.0	1.1	0.9

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.595
Loss Time (sec): 12 Average Delay (sec/veh): 19.4
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	132	0	126	0	0	0	0	1044	205	194	471	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	132	0	126	0	0	0	0	1044	205	194	471	0
Added Vol:	-24	0	-18	0	0	0	0	0	-15	-16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	108	0	108	0	0	0	0	1044	190	178	471	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	114	0	114	0	0	0	0	1099	200	187	496	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	114	0	114	0	0	0	0	1099	200	187	496	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	114	0	114	0	0	0	0	1099	200	187	496	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.69	0.31	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	2984	543	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.07	0.00	0.00	0.00	0.00	0.37	0.37	0.10	0.14	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.60	0.60	0.17	0.78	0.00
Volume/Cap:	0.50	0.00	0.56	0.00	0.00	0.00	0.00	0.61	0.61	0.61	0.18	0.00
Delay/Veh:	50.8	0.0	53.0	0.0	0.0	0.0	0.0	15.4	15.4	49.6	3.6	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.8	0.0	53.0	0.0	0.0	0.0	0.0	15.4	15.4	49.6	3.6	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	4	0	5	0	0	0	0	16	16	6	2	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.353
Loss Time (sec):	0	Average Delay (sec/veh):	9.3
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0 1!	0 0
Volume Module:												
Base Vol:	40	175	8	7	271	93	44	1	27	1	1	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	40	175	8	7	271	93	44	1	27	1	1	2
Added Vol:	-12	-42	0	0	-31	0	0	0	-5	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	28	133	8	7	240	93	44	1	22	1	1	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	29	140	8	7	253	98	46	1	0	1	1	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	29	140	8	7	253	98	46	1	0	1	1	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	29	140	8	7	253	98	46	1	0	1	1	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.03	0.97	1.00	0.98	0.02	1.00	0.25	0.25	0.50
Final Sat.:	605	663	756	21	715	862	534	12	665	151	151	303
Capacity Analysis Module:												
Vol/Sat:	0.05	0.21	0.01	0.35	0.35	0.11	0.09	0.09	0.00	0.01	0.01	0.01
Crit Moves:		****			****		****				****	
Delay/Veh:	8.8	9.4	7.4	10.1	10.1	7.3	9.4	9.4	0.0	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.8	9.4	7.4	10.1	10.1	7.3	9.4	9.4	0.0	8.5	8.5	8.5
LOS by Move:	A	A	A	B	B	A	A	A	*	A	A	A
ApproachDel:	9.2			9.3			9.4			8.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.2			9.3			9.4			8.5		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.0	0.3	0.0	0.5	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.460
Loss Time (sec):	12	Average Delay (sec/veh):	26.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	1	0 1	0	1	0 1	1	0	0 1 1 0 1
Volume Module:												
Base Vol:	32	54	276	377	35	105	54	659	36	183	723	52
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	54	276	377	35	105	54	659	36	183	723	52
Added Vol:	-32	-54	-276	0	-35	0	0	-166	-36	-183	-222	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	377	0	105	54	493	0	0	501	52
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	397	0	111	57	519	0	0	527	55
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	397	0	111	57	519	0	0	527	55
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	397	0	111	57	519	0	0	527	55
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.88	0.95	0.88	0.95	0.95	0.95	0.95	0.95	0.85
Lanes:	0.00	1.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	1900	0	1679	0	1679	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.24	0.00	0.07	0.03	0.14	0.00	0.00	0.15	0.03
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.50	0.00	0.59	0.08	0.40	0.00	0.00	0.31	0.82
Volume/Cap:	0.00	0.00	0.00	0.47	0.00	0.11	0.38	0.36	0.00	0.00	0.47	0.04
Delay/Veh:	0.0	0.0	0.0	19.6	0.0	10.9	53.7	25.8	0.0	0.0	33.6	2.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	19.6	0.0	10.9	53.7	25.8	0.0	0.0	33.6	2.1
LOS by Move:	A	A	A	B	A	B	D	C	A	A	C	A
HCM2kAvgQ:	0	0	0	10	0	2	2	7	0	0	8	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.716
Loss Time (sec): 12 Average Delay (sec/veh): 25.7
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	0	1 0	0 1	0	0 1	0	1	0 2	0 0
Volume Module:												
Base Vol:	0	0	0	106	0	332	0	533	633	44	336	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	106	0	332	0	533	633	44	336	0
Added Vol:	0	0	0	0	0	0	0	-18	0	0	-16	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	106	0	332	0	515	633	44	320	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	112	0	349	0	542	666	46	337	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	112	0	349	0	542	666	46	337	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	112	0	349	0	542	666	46	337	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.87	0.87	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1655	1655	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.22	0.00	0.33	0.40	0.03	0.09	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.53	0.53	0.08	0.61	0.00
Volume/Cap:	0.00	0.00	0.00	0.22	0.00	0.76	0.00	0.62	0.76	0.31	0.15	0.00
Delay/Veh:	0.0	0.0	0.0	32.9	0.0	46.2	0.0	20.2	24.2	52.9	9.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.9	0.0	46.2	0.0	20.2	24.2	52.9	9.9	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	D	A	A
HCM2kAvgQ:	0	0	0	3	0	13	0	14	20	2	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.837
Loss Time (sec):	12	Average Delay (sec/veh):	37.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1 0	0	0 0	0 1	0
Volume Module:												
Base Vol:	0	0	0	442	0	511	373	941	0	0	583	171
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	442	0	511	373	941	0	0	583	171
Added Vol:	0	0	0	0	0	-240	-105	-338	0	0	-165	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	442	0	271	268	603	0	0	418	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	465	0	285	282	635	0	0	440	180
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	465	0	285	282	635	0	0	440	180
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	465	0	285	282	635	0	0	440	180
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.96	0.96
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.71	0.29
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1296	530
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.26	0.00	0.18	0.16	0.33	0.00	0.00	0.34	0.34
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.31	0.19	0.59	0.00	0.00	0.41	0.41
Volume/Cap:	0.00	0.00	0.00	0.84	0.00	0.57	0.84	0.56	0.00	0.00	0.84	0.84
Delay/Veh:	0.0	0.0	0.0	49.5	0.0	36.6	63.6	15.6	0.0	0.0	40.4	40.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	49.5	0.0	36.6	63.6	15.6	0.0	0.0	40.4	40.4
LOS by Move:	A	A	A	D	A	D	E	B	A	A	D	D
HCM2kAvgQ:	0	0	0	18	0	9	11	14	0	0	19	19

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.314
Loss Time (sec): 12 Average Delay (sec/veh): 29.4
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	220	0	24	0	0	0	283	359	0	0	158	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	220	0	24	0	0	0	283	359	0	0	158	39
Added Vol:	0	0	0	0	0	0	0	-18	0	0	-16	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	220	0	24	0	0	0	283	341	0	0	142	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	232	0	25	0	0	0	298	359	0	0	149	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	232	0	25	0	0	0	298	359	0	0	149	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	232	0	25	0	0	0	298	359	0	0	149	41
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.94	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	0.92
Lanes:	0.90	0.00	0.10	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.57	0.43
Final Sat.:	1618	0	177	0	0	0	3502	1900	0	0	2742	753
Capacity Analysis Module:												
Vol/Sat:	0.14	0.00	0.14	0.00	0.00	0.00	0.09	0.19	0.00	0.00	0.05	0.05
Crit Moves:			****				****				****	
Green/Cycle:	0.46	0.00	0.46	0.00	0.00	0.00	0.27	0.44	0.00	0.00	0.17	0.17
Volume/Cap:	0.31	0.00	0.31	0.00	0.00	0.00	0.31	0.43	0.00	0.00	0.31	0.31
Delay/Veh:	21.0	0.0	21.0	0.0	0.0	0.0	35.1	23.2	0.0	0.0	43.6	43.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.0	0.0	21.0	0.0	0.0	0.0	35.1	23.2	0.0	0.0	43.6	43.6
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	6	0	6	0	0	0	4	9	0	0	3	3

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.668
Loss Time (sec):	12	Average Delay (sec/veh):	43.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Split Phase				Split Phase				Protected				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	0	15		0	0	0		10	15	0		0	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	0	1 0	0	1	0	0 0	0	0	1	0	1 0	0	0	0	1 0	1
Volume Module:																
Base Vol:	222	0	203		0	0	0		448	937	0		0	529	387	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	222	0	203		0	0	0		448	937	0		0	529	387	
Added Vol:	-92	0	0		0	0	0		-247	-91	0		0	-72	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	130	0	203		0	0	0		201	846	0		0	457	387	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	137	0	214		0	0	0		212	891	0		0	481	407	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	137	0	214		0	0	0		212	891	0		0	481	407	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	137	0	214		0	0	0		212	891	0		0	481	407	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	1.00	0.85		1.00	1.00	1.00		0.95	1.00	1.00		1.00	1.00	0.85	
Lanes:	1.00	0.00	1.00		0.00	0.00	0.00		1.00	1.00	0.00		0.00	1.00	1.00	
Final Sat.:	1809	0	1615		0	0	0		1805	1900	0		0	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.08	0.00	0.13		0.00	0.00	0.00		0.12	0.47	0.00		0.00	0.25	0.25	
Crit Moves:			****							****						
Green/Cycle:	0.14	0.00	0.14		0.00	0.00	0.00		0.49	0.76	0.00		0.00	0.27	0.27	
Volume/Cap:	0.54	0.00	0.95		0.00	0.00	0.00		0.24	0.62	0.00		0.00	0.95	0.95	
Delay/Veh:	50.5	0.0	96.9		0.0	0.0	0.0		17.6	7.3	0.0		0.0	70.8	73.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	50.5	0.0	96.9		0.0	0.0	0.0		17.6	7.3	0.0		0.0	70.8	73.0	
LOS by Move:	D	A	F		A	A	A		B	A	A		A	E	E	
HCM2kAvgQ:	5	0	12		0	0	0		4	15	0		0	20	17	

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.459
Loss Time (sec): 12 Average Delay (sec/veh): 24.5
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	1 0	0 0	2	2 0	2 0	0	0 0	3 0	1
Volume Module:												
Base Vol:	0	0	0	136	0	472	565	567	0	0	429	111
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	136	0	472	565	567	0	0	429	111
Added Vol:	0	0	0	0	0	-11	-6	-85	0	0	-61	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	136	0	461	559	482	0	0	368	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	143	0	485	588	507	0	0	387	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	143	0	485	588	507	0	0	387	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	143	0	485	588	507	0	0	387	117
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.17	0.17	0.14	0.00	0.00	0.07	0.07
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.37	0.00	0.74	0.37	0.53	0.00	0.00	0.16	0.16
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.23	0.46	0.27	0.00	0.00	0.46	0.44
Delay/Veh:	0.0	0.0	0.0	25.9	0.0	5.0	29.3	15.6	0.0	0.0	45.9	46.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	25.9	0.0	5.0	29.3	15.6	0.0	0.0	45.9	46.6
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	4	0	3	8	5	0	0	5	4

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.614
Loss Time (sec): 16 Average Delay (sec/veh): 39.2
Optimal Cycle: OPTIMIZED Level Of Service: D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	10	20	20		10	20	20		10	20	20		10	20	20	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0 1	0	1	1	0 1	1	0	1	0 1	0	1	1	0 2	1	0
Volume Module:																
Base Vol:	194	201	42		282	388	60		34	391	288		110	271	83	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	194	201	42		282	388	60		34	391	288		110	271	83	
Added Vol:	-19	0	0		0	0	-8		-14	-44	-26		0	-34	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	175	201	42		282	388	52		20	347	262		110	237	83	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	184	212	44		297	408	55		21	365	276		116	249	87	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	184	212	44		297	408	55		21	365	276		116	249	87	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	184	212	44		297	408	55		21	365	276		116	249	87	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.92	1.00	0.85		0.95	0.93	0.93		0.95	1.00	0.85		0.95	0.87	0.87	
Lanes:	2.00	1.00	1.00		1.00	1.76	0.24		1.00	1.00	1.00		1.00	2.22	0.78	
Final Sat.:	3502	1900	1615		1805	3126	419		1805	1900	1615		1805	3692	1293	
Capacity Analysis Module:																
Vol/Sat:	0.05	0.11	0.03		0.16	0.13	0.13		0.01	0.19	0.17		0.06	0.07	0.07	
Crit Moves:		****			****					****			****			
Green/Cycle:	0.15	0.18	0.18		0.27	0.30	0.30		0.14	0.31	0.31		0.10	0.28	0.28	
Volume/Cap:	0.35	0.61	0.15		0.61	0.44	0.44		0.08	0.61	0.55		0.61	0.24	0.24	
Delay/Veh:	46.2	48.5	41.6		40.9	34.2	34.2		45.1	37.0	35.4		57.3	33.6	33.6	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	46.2	48.5	41.6		40.9	34.2	34.2		45.1	37.0	35.4		57.3	33.6	33.6	
LOS by Move:	D	D	D		D	C	C		D	D	D		E	C	C	
HCM2kAvgQ:	3	8	1		10	7	7		1	11	8		5	4	4	

Note: Queue reported is the number of cars per lane.

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APPENDIX 5.3

2014 With Project Conditions
Intersection Operations Analysis Worksheets

Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.451
Loss Time (sec):	0	Average Delay (sec/veh):	93.2
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	92	234	270	177	139	3	4	150	85	131	82	149
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	92	234	270	177	139	3	4	150	85	131	82	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	122	310	357	234	184	4	5	199	113	173	109	197
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	310	357	234	184	4	5	199	113	173	109	197
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	122	310	357	234	184	4	5	199	113	173	109	197
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.46	0.54	1.00	0.98	0.02	1.00	0.64	0.36	1.00	1.00	1.00
Final Sat.:	406	214	246	392	406	9	380	267	151	364	382	414
Capacity Analysis Module:												
Vol/Sat:	0.30	1.45	1.45	0.60	0.45	0.45	0.01	0.74	0.74	0.48	0.28	0.48
Crit Moves:		****		****				****				****
Delay/Veh:	15.0	236	236.1	23.8	17.8	17.8	12.1	31.3	31.3	20.7	15.4	18.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.0	236	236.1	23.8	17.8	17.8	12.1	31.3	31.3	20.7	15.4	18.5
LOS by Move:	B	F	F	C	C	C	B	D	D	C	C	C
ApproachDel:	202.0			21.1			30.9			18.6		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	202.0			21.1			30.9			18.6		
LOS by Appr:	F			C			D			C		
AllWayAvgQ:	0.4	28.8	28.8	1.3	0.8	0.8	0.0	2.3	2.3	0.8	0.4	0.8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.774
Loss Time (sec):	8	Average Delay (sec/veh):	15.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	92	234	270	177	139	3	4	150	85	131	82	149
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	92	234	270	177	139	3	4	150	85	131	82	149
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	122	310	357	234	184	4	5	199	113	173	109	197
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	310	357	234	184	4	5	199	113	173	109	197
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	122	310	357	234	184	4	5	199	113	173	109	197
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.63	0.92	0.92	0.28	1.00	1.00	0.68	0.95	0.95	0.41	1.00	0.85
Lanes:	1.00	0.46	0.54	1.00	0.98	0.02	1.00	0.64	0.36	1.00	1.00	1.00
Final Sat.:	1201	812	936	524	1854	40	1298	1147	650	775	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.10	0.38	0.38	0.45	0.10	0.10	0.00	0.17	0.17	0.22	0.06	0.12
Crit Moves:				****						****		
Green/Cycle:	0.58	0.58	0.58	0.58	0.58	0.58	0.29	0.29	0.29	0.29	0.29	0.29
Volume/Cap:	0.18	0.66	0.66	0.77	0.17	0.17	0.01	0.60	0.60	0.77	0.20	0.42
Delay/Veh:	6.1	10.3	10.3	21.4	6.0	6.0	15.2	20.3	20.3	34.9	16.3	17.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	6.1	10.3	10.3	21.4	6.0	6.0	15.2	20.3	20.3	34.9	16.3	17.9
LOS by Move:	A	B	B	C	A	A	B	C	C	C	B	B
HCM2kAvgQ:	1	9	9	6	2	2	0	6	6	5	2	3

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.336
Loss Time (sec):	0	Average Delay (sec/veh):	9.5
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	6	181	12	22	218	10	41	8	23	11	2	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	181	12	22	218	10	41	8	23	11	2	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	191	13	23	229	11	43	8	24	12	2	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	191	13	23	229	11	43	8	24	12	2	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	191	13	23	229	11	43	8	24	12	2	32
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.94	0.06	1.00	0.96	0.04	0.57	0.11	0.32	0.25	0.05	0.70
Final Sat.:	638	664	44	645	684	31	379	74	212	177	32	482
Capacity Analysis Module:												
Vol/Sat:	0.01	0.29	0.29	0.04	0.34	0.34	0.11	0.11	0.11	0.07	0.07	0.07
Crit Moves:		****			****			****			****	
Delay/Veh:	8.3	9.6	9.6	8.4	10.1	10.1	8.6	8.6	8.6	8.1	8.1	8.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	9.6	9.6	8.4	10.1	10.1	8.6	8.6	8.6	8.1	8.1	8.1
LOS by Move:	A	A	A	A	B	B	A	A	A	A	A	A
ApproachDel:		9.6			9.9			8.6			8.1	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.6			9.9			8.6			8.1	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.4	0.4	0.0	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.511
Loss Time (sec):	0	Average Delay (sec/veh):	14.5
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	176	0	68	41	514	0	0	394	143
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	176	0	68	41	514	0	0	394	143
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	185	0	72	43	541	0	0	415	151
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	185	0	72	43	541	0	0	415	151
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	185	0	72	43	541	0	0	415	151
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.47	0.53
Final Sat.:	0	0	0	460	0	538	488	1058	0	0	849	321
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.40	xxxx	0.13	0.09	0.51	xxxx	xxxx	0.49	0.47
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	14.8	0.0	9.9	10.5	15.9	0.0	0.0	14.2	13.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	14.8	0.0	9.9	10.5	15.9	0.0	0.0	14.2	13.4
LOS by Move:	*	*	*	B	*	A	B	C	*	*	B	B
ApproachDel:	xxxxxx			13.5			15.5			14.0		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			13.5			15.5			14.0		
LOS by Appr:	*			B			C			B		
AllWayAvgQ:	0.0	0.0	0.0	0.6	0.0	0.1	0.1	1.0	0.0	0.0	0.9	0.8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.450
Loss Time (sec): 12 Average Delay (sec/veh): 17.9
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	191	0	140	0	0	0	0	797	80	59	754	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	191	0	140	0	0	0	0	797	80	59	754	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	201	0	147	0	0	0	0	839	84	62	794	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	201	0	147	0	0	0	0	839	84	62	794	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	201	0	147	0	0	0	0	839	84	62	794	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.94	0.94	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.82	0.18	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3235	325	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.11	0.00	0.09	0.00	0.00	0.00	0.00	0.26	0.26	0.03	0.22	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.57	0.57	0.08	0.65	0.00
Volume/Cap:	0.45	0.00	0.37	0.00	0.00	0.00	0.00	0.45	0.45	0.41	0.34	0.00
Delay/Veh:	39.2	0.0	38.2	0.0	0.0	0.0	0.0	15.1	15.1	54.1	9.3	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.2	0.0	38.2	0.0	0.0	0.0	0.0	15.1	15.1	54.1	9.3	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	7	0	5	0	0	0	0	10	10	2	7	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.264
Loss Time (sec):	0	Average Delay (sec/veh):	9.1
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0 1!	0 0
Volume Module:												
Base Vol:	19	173	6	6	120	31	82	3	44	1	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	19	173	6	6	120	31	82	3	44	1	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	20	182	6	6	126	33	86	3	0	1	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	20	182	6	6	126	33	86	3	0	1	1	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	20	182	6	6	126	33	86	3	0	1	1	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.05	0.95	1.00	0.96	0.04	1.00	0.34	0.33	0.33
Final Sat.:	626	689	791	34	673	822	564	21	719	208	208	208
Capacity Analysis Module:												
Vol/Sat:	0.03	0.26	0.01	0.19	0.19	0.04	0.15	0.15	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	8.5	9.6	7.2	8.8	8.8	7.1	9.6	9.6	0.0	8.4	8.4	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	9.6	7.2	8.8	8.8	7.1	9.6	9.6	0.0	8.4	8.4	8.4
LOS by Move:	A	A	A	A	A	A	A	A	*	A	A	A
ApproachDel:		9.4			8.5			9.6			8.4	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		9.4			8.5			9.6			8.4	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.3	0.0	0.2	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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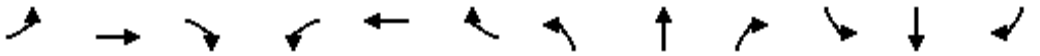

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	37	630	24	249	434	72	34	29	150	118	49	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3517		1770	3539	1535	1770	1863	1565	3433	1863	1554
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3517		1770	3539	1535	1770	1863	1565	3433	1863	1554
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	663	25	262	457	76	36	31	158	124	52	72
RTOR Reduction (vph)	0	2	0	0	0	36	0	0	28	0	0	48
Lane Group Flow (vph)	39	686	0	262	457	40	36	31	130	124	52	24
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	5.6	32.7		27.6	54.7	63.5	9.0	34.9	62.5	8.8	34.7	40.3
Effective Green, g (s)	5.6	32.7		27.6	54.7	63.5	9.0	34.9	62.5	8.8	34.7	40.3
Actuated g/C Ratio	0.05	0.27		0.23	0.46	0.53	0.08	0.29	0.52	0.07	0.29	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	83	958		407	1613	863	133	542	867	252	539	522
v/s Ratio Prot	0.02	c0.19		c0.15	0.13	0.00	c0.02	0.02	c0.03	c0.04	0.03	0.00
v/s Ratio Perm						0.02			0.05			0.01
v/c Ratio	0.47	0.72		0.64	0.28	0.05	0.27	0.06	0.15	0.49	0.10	0.05
Uniform Delay, d1	55.8	39.5		41.8	20.4	13.6	52.4	30.7	14.9	53.5	31.2	26.9
Progression Factor	1.00	1.00		0.87	0.53	0.30	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.2	4.6		2.8	0.4	0.1	4.9	0.2	0.1	6.7	0.4	0.0
Delay (s)	59.9	44.0		39.1	11.1	4.2	57.3	30.9	15.0	60.2	31.5	26.9
Level of Service	E	D		D	B	A	E	C	B	E	C	C
Approach Delay (s)		44.9			19.7			24.0			44.5	
Approach LOS		D			B			C			D	

Intersection Summary			
HCM Average Control Delay	32.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.555
Loss Time (sec):	12	Average Delay (sec/veh):	22.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	100	0	236	0	661	274	104	585	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	100	0	236	0	661	274	104	585	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	105	0	248	0	696	288	109	616	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	105	0	248	0	696	288	109	616	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	105	0	248	0	696	288	109	616	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.91	0.91	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.41	0.59	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2440	1011	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.15	0.00	0.29	0.29	0.06	0.17	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.28	0.00	0.28	0.00	0.51	0.51	0.11	0.62	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.56	0.00	0.56	0.56	0.56	0.27	0.00
Delay/Veh:	0.0	0.0	0.0	33.5	0.0	38.6	0.0	20.2	20.2	54.1	10.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.5	0.0	38.6	0.0	20.2	20.2	54.1	10.4	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	D	B	A
HCM2kAvgQ:	0	0	0	3	0	8	0	13	13	4	5	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.746
Loss Time (sec): 12 Average Delay (sec/veh): 33.2
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	244	0	401	191	707	0	0	437	89
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	244	0	401	191	707	0	0	437	89
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	257	0	422	201	744	0	0	460	94
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	257	0	422	201	744	0	0	460	94
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	257	0	422	201	744	0	0	460	94
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.83	0.17
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1542	314
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.14	0.00	0.26	0.11	0.39	0.00	0.00	0.30	0.30
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.35	0.00	0.35	0.15	0.55	0.00	0.00	0.40	0.40
Volume/Cap:	0.00	0.00	0.00	0.41	0.00	0.75	0.75	0.71	0.00	0.00	0.75	0.75
Delay/Veh:	0.0	0.0	0.0	29.9	0.0	39.6	59.6	22.4	0.0	0.0	34.9	34.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	29.9	0.0	39.6	59.6	22.4	0.0	0.0	34.9	34.9
LOS by Move:	A	A	A	C	A	D	E	C	A	A	C	C
HCM2kAvgQ:	0	0	0	7	0	15	7	20	0	0	17	17

Note: Queue reported is the number of cars per lane.

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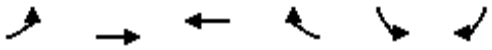

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	191	707	437	89	244	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1863	1820		1770	1556
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1863	1820		1770	1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	201	744	460	94	257	422
RTOR Reduction (vph)	0	0	6	0	0	302
Lane Group Flow (vph)	201	744	548	0	257	120
Confl. Peds. (#/hr)						5
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	14.0	78.0	60.0		34.0	34.0
Effective Green, g (s)	14.0	78.0	60.0		34.0	34.0
Actuated g/C Ratio	0.12	0.65	0.50		0.28	0.28
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	401	1211	910		502	441
v/s Ratio Prot	0.06	c0.40	0.30		c0.15	
v/s Ratio Perm						0.08
v/c Ratio	0.50	0.61	0.60		0.51	0.27
Uniform Delay, d1	49.7	12.2	21.5		36.0	33.4
Progression Factor	0.64	0.41	0.13		1.00	1.00
Incremental Delay, d2	0.8	1.9	2.4		3.7	1.5
Delay (s)	32.6	6.9	5.3		39.7	34.9
Level of Service	C	A	A		D	C
Approach Delay (s)		12.3	5.3		36.7	
Approach LOS		B	A		D	

Intersection Summary			
HCM Average Control Delay	18.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.658
Loss Time (sec):	12	Average Delay (sec/veh):	35.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	361	0	120	0	0	0	465	281	0	0	312	222
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	361	0	120	0	0	0	465	281	0	0	312	222
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	380	0	126	0	0	0	489	296	0	0	328	234
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	380	0	126	0	0	0	489	296	0	0	328	234
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	380	0	126	0	0	0	489	296	0	0	328	234
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.89	0.89
Lanes:	0.75	0.00	0.25	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.17	0.83
Final Sat.:	1328	0	441	0	0	0	3502	1900	0	0	1978	1408
Capacity Analysis Module:												
Vol/Sat:	0.29	0.00	0.29	0.00	0.00	0.00	0.14	0.16	0.00	0.00	0.17	0.17
Crit Moves:			****				****				****	
Green/Cycle:	0.44	0.00	0.44	0.00	0.00	0.00	0.21	0.46	0.00	0.00	0.25	0.25
Volume/Cap:	0.66	0.00	0.66	0.00	0.00	0.00	0.66	0.33	0.00	0.00	0.66	0.66
Delay/Veh:	28.9	0.0	28.9	0.0	0.0	0.0	45.4	20.6	0.0	0.0	42.1	42.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	28.9	0.0	28.9	0.0	0.0	0.0	45.4	20.6	0.0	0.0	42.1	42.1
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	15	0	15	0	0	0	8	7	0	0	11	11

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.972
Loss Time (sec):	12	Average Delay (sec/veh):	49.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	178	0	60	0	0	0	534	418	0	0	351	705
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	178	0	60	0	0	0	534	418	0	0	351	705
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	187	0	63	0	0	0	562	440	0	0	369	742
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	187	0	63	0	0	0	562	440	0	0	369	742
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	187	0	63	0	0	0	562	440	0	0	369	742
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.10	0.00	0.04	0.00	0.00	0.00	0.31	0.23	0.00	0.00	0.19	0.46
Crit Moves:	****						****					****
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.31	0.78	0.00	0.00	0.46	0.46
Volume/Cap:	0.83	0.00	0.31	0.00	0.00	0.00	0.99	0.30	0.00	0.00	0.42	0.99
Delay/Veh:	73.0	0.0	48.7	0.0	0.0	0.0	77.5	4.1	0.0	0.0	21.9	63.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	73.0	0.0	48.7	0.0	0.0	0.0	77.5	4.1	0.0	0.0	21.9	63.7
LOS by Move:	E	A	D	A	A	A	E	A	A	A	C	E
HCM2kAvgQ:	9	0	2	0	0	0	24	5	0	0	9	32

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.279
Loss Time (sec): 12 Average Delay (sec/veh): 14.9
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	24	0	82	141	337	0	0	960	60
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	24	0	82	141	337	0	0	960	60
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	25	0	86	148	355	0	0	1011	63
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	25	0	86	148	355	0	0	1011	63
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	25	0	86	148	355	0	0	1011	63
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.01	0.00	0.03	0.04	0.10	0.00	0.00	0.19	0.04
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.30	0.13	0.73	0.00	0.00	0.60	0.60
Volume/Cap:	0.00	0.00	0.00	0.08	0.00	0.10	0.32	0.13	0.00	0.00	0.32	0.06
Delay/Veh:	0.0	0.0	0.0	42.4	0.0	30.6	47.7	4.8	0.0	0.0	11.8	9.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.4	0.0	30.6	47.7	4.8	0.0	0.0	11.8	9.9
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	A
HCM2kAvgQ:	0	0	0	1	0	1	2	2	0	0	6	1

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.655
Loss Time (sec):	16	Average Delay (sec/veh):	37.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	526	683	216	60	66	50	23	233	106	43	442	200
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	526	683	216	60	66	50	23	233	106	43	442	200
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	554	719	227	63	69	53	24	245	112	45	465	211
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	554	719	227	63	69	53	24	245	112	45	465	211
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	554	719	227	63	69	53	24	245	112	45	465	211
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.89	0.89	0.95	1.00	0.85	0.95	0.87	0.87
Lanes:	2.00	1.00	1.00	1.00	1.14	0.86	1.00	1.00	1.00	1.00	2.07	0.93
Final Sat.:	3502	1900	1615	1805	1920	1455	1805	1900	1615	1805	3403	1540
Capacity Analysis Module:												
Vol/Sat:	0.16	0.38	0.14	0.03	0.04	0.04	0.01	0.13	0.07	0.03	0.14	0.14
Crit Moves:		****		****				****		****		
Green/Cycle:	0.29	0.52	0.52	0.08	0.31	0.31	0.09	0.18	0.18	0.08	0.17	0.17
Volume/Cap:	0.54	0.72	0.27	0.42	0.12	0.12	0.15	0.72	0.39	0.30	0.78	0.78
Delay/Veh:	36.0	24.8	16.1	54.1	29.6	29.6	51.1	54.1	44.4	52.8	52.2	52.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	36.0	24.8	16.1	54.1	29.6	29.6	51.1	54.1	44.4	52.8	52.2	52.2
LOS by Move:	D	C	B	D	C	C	D	D	D	D	D	D
HCM2kAvgQ:	9	21	5	3	2	2	1	9	4	2	11	11

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.242
Loss Time (sec):	12	Average Delay (sec/veh):	14.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	3	0	251	0	0	0	0	304	12	170	293	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	0	251	0	0	0	0	304	12	170	293	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	0	264	0	0	0	0	320	13	179	308	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	0	264	0	0	0	0	320	13	179	308	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	0	264	0	0	0	0	320	13	179	308	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.94	0.94	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.92	0.08	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3452	136	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.09	0.09	0.10	0.09	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.68	0.00	0.68	0.00	0.00	0.00	0.00	0.25	0.25	0.17	0.42	0.00
Volume/Cap:	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.37	0.37	0.59	0.21	0.00
Delay/Veh:	3.2	0.0	3.9	0.0	0.0	0.0	0.0	18.9	18.9	26.3	11.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	3.2	0.0	3.9	0.0	0.0	0.0	0.0	18.9	18.9	26.3	11.2	0.0
LOS by Move:	A	A	A	A	A	A	A	B	B	C	B	A
HCM2kAvgQ:	0	0	2	0	0	0	0	3	3	4	2	0

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 7.5 Worst Case Level Of Service: A[9.5]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1	0	0	0 1	0	0	0 0	0	0	0 0	0	1
Volume Module:												
Base Vol:	0	46	0	170	12	0	0	0	0	0	0	208
Growth Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
Initial Bse:	0	46	0	170	12	0	0	0	0	0	0	208
User Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Adj:	0.95 0.95	0.95		0.95 0.95	0.95		0.95 0.95	0.95		0.95 0.95	0.95	
PHF Volume:	0	48	0	179	13	0	0	0	0	0	0	219
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	48	0	179	13	0	0	0	0	0	0	219
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	48	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	48
Potent Cap.:	xxxx	xxxx	xxxxx	1572	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1026
Move Cap.:	xxxx	xxxx	xxxxx	1572	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1026
Volume/Cap:	xxxx	xxxx	xxxx	0.11	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.21
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.8
Control Del:	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.5
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	A
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.4	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			9.5		
ApproachLOS:	*			*			*			A		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[11.9]

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Uncontrolled						Uncontrolled						Stop Sign						Stop Sign					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	1	0	0		0	0	0	1	0		1	0	0	0	0		0	0	0	0	0	
Volume Module:																								
Base Vol:	0	187		0		0	203		121				26		0			0	0		0			0
Growth Adj:	1.00	1.00		1.00		1.00	1.00		1.00				1.00		1.00			1.00	1.00		1.00			1.00
Initial Bse:	0	187		0		0	203		121				26		0			0	0		0			0
User Adj:	1.00	1.00		1.00		1.00	1.00		1.00				1.00		1.00			1.00	1.00		1.00			1.00
PHF Adj:	0.95	0.95		0.95		0.95	0.95		0.95				0.95		0.95			0.95	0.95		0.95			0.95
PHF Volume:	0	197		0		0	214		127				27		0			0	0		0			0
Reduct Vol:	0	0		0		0	0		0				0		0			0	0		0			0
FinalVolume:	0	197		0		0	214		127				27		0			0	0		0			0
Critical Gap Module:																								
Critical Gp:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx				6.4		xxxx			xxxxx	xxxxx		xxxx			xxxxx
FollowUpTim:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx				3.5		xxxx			xxxxx	xxxxx		xxxx			xxxxx
Capacity Module:																								
Cnflict Vol:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx				474		xxxx			xxxxx	xxxx		xxxx			xxxxx
Potent Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx				553		xxxx			xxxxx	xxxx		xxxx			xxxxx
Move Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx				553		xxxx			xxxxx	xxxx		xxxx			xxxxx
Volume/Cap:	xxxx	xxxx		xxxx		xxxx	xxxx		xxxx				0.05		xxxx			xxxx	xxxx		xxxx			xxxx
Level Of Service Module:																								
2Way95thQ:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx				0.2		xxxx			xxxxx	xxxx		xxxx			xxxxx
Control Del:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx				11.9		xxxx			xxxxx	xxxxx		xxxx			xxxxx
LOS by Move:	*	*		*		*	*		*				B		*			*	*		*			*
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	xxxx		xxxxx		xxxx	xxxx		xxxxx				xxxx	xxxx		xxxxx			xxxx	xxxx		xxxxx		
SharedQueue:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx				xxxxx	xxxx		xxxxx			xxxxx	xxxx		xxxxx		
Shrd ConDel:	xxxxx	xxxx		xxxxx		xxxxx	xxxx		xxxxx				xxxxx	xxxx		xxxxx			xxxxx	xxxx		xxxxx		
Shared LOS:	*	*		*		*	*		*				*	*		*			*	*		*		
ApproachDel:	xxxxxx			xxxxxx					11.9						xxxxxx									
ApproachLOS:	*			*					B						*									

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.529
Loss Time (sec):	0	Average Delay (sec/veh):	13.4
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	85	90	158	29	107	1	3	74	151	243	96	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	85	90	158	29	107	1	3	74	151	243	96	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	89	95	166	31	113	1	3	78	159	256	101	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	89	95	166	31	113	1	3	78	159	256	101	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	89	95	166	31	113	1	3	78	159	256	101	19
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.36	0.64	1.00	0.99	0.01	1.00	0.33	0.67	1.00	1.00	1.00
Final Sat.:	487	205	359	454	482	5	480	184	375	484	515	569
Capacity Analysis Module:												
Vol/Sat:	0.18	0.46	0.46	0.07	0.23	0.23	0.01	0.42	0.42	0.53	0.20	0.03
Crit Moves:		****			****			****			****	
Delay/Veh:	11.2	13.6	13.6	10.6	11.5	11.5	9.8	12.9	12.9	17.2	10.9	8.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.2	13.6	13.6	10.6	11.5	11.5	9.8	12.9	12.9	17.2	10.9	8.9
LOS by Move:	B	B	B	B	B	B	A	B	B	C	B	A
ApproachDel:	13.0			11.3			12.8			15.1		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	13.0			11.3			12.8			15.1		
LOS by Appr:	B			B			B			C		
AllWayAvgQ:	0.2	0.7	0.7	0.1	0.3	0.3	0.0	0.6	0.6	1.0	0.2	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.436
Loss Time (sec):	8	Average Delay (sec/veh):	11.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	85	90	158	29	107	1	3	74	151	243	96	18
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	85	90	158	29	107	1	3	74	151	243	96	18
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	89	95	166	31	113	1	3	78	159	256	101	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	89	95	166	31	113	1	3	78	159	256	101	19
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	89	95	166	31	113	1	3	78	159	256	101	19
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.68	0.90	0.90	0.52	1.00	1.00	0.69	0.90	0.90	0.60	1.00	0.85
Lanes:	1.00	0.36	0.64	1.00	0.99	0.01	1.00	0.33	0.67	1.00	1.00	1.00
Final Sat.:	1292	623	1094	982	1881	18	1309	562	1146	1132	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.07	0.15	0.15	0.03	0.06	0.06	0.00	0.14	0.14	0.23	0.05	0.01
Crit Moves:		****								****		
Green/Cycle:	0.35	0.35	0.35	0.35	0.35	0.35	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.20	0.44	0.44	0.09	0.17	0.17	0.00	0.27	0.27	0.44	0.10	0.02
Delay/Veh:	13.9	15.5	15.5	13.3	13.7	13.7	7.0	8.3	8.3	9.5	7.4	7.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.9	15.5	15.5	13.3	13.7	13.7	7.0	8.3	8.3	9.5	7.4	7.1
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	1	4	4	0	2	2	0	3	3	3	1	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.503
Loss Time (sec):	0	Average Delay (sec/veh):	11.4
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	28	269	19	14	308	31	13	6	30	9	12	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	28	269	19	14	308	31	13	6	30	9	12	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	29	283	20	15	324	33	14	6	32	9	13	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	29	283	20	15	324	33	14	6	32	9	13	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	29	283	20	15	324	33	14	6	32	9	13	34
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.93	0.07	1.00	0.91	0.09	0.27	0.12	0.61	0.17	0.23	0.60
Final Sat.:	631	655	46	634	644	65	161	74	371	103	138	368
Capacity Analysis Module:												
Vol/Sat:	0.05	0.43	0.43	0.02	0.50	0.50	0.09	0.09	0.09	0.09	0.09	0.09
Crit Moves:		****			****			****				****
Delay/Veh:	8.6	11.4	11.4	8.4	12.5	12.5	8.7	8.7	8.7	8.7	8.7	8.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.6	11.4	11.4	8.4	12.5	12.5	8.7	8.7	8.7	8.7	8.7	8.7
LOS by Move:	A	B	B	A	B	B	A	A	A	A	A	A
ApproachDel:		11.2			12.4			8.7			8.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		11.2			12.4			8.7			8.7	
LOS by Appr:		B			B			A			A	
AllWayAvgQ:	0.0	0.7	0.7	0.0	1.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.851
Loss Time (sec):	0	Average Delay (sec/veh):	27.6
Optimal Cycle:	0	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	295	0	62	83	455	0	0	569	284
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	295	0	62	83	455	0	0	569	284
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	311	0	65	87	479	0	0	599	299
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	311	0	65	87	479	0	0	599	299
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	311	0	65	87	479	0	0	599	299
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.33	0.67
Final Sat.:	0	0	0	432	0	492	416	894	0	0	704	369
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.72	xxxx	0.13	0.21	0.54	xxxx	xxxx	0.85	0.81
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	28.1	0.0	10.7	13.2	19.0	0.0	0.0	36.8	30.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	28.1	0.0	10.7	13.2	19.0	0.0	0.0	36.8	30.4
LOS by Move:	*	*	*	D	*	B	B	C	*	*	E	D
ApproachDel:	xxxxxx			25.1			18.1			34.7		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			25.1			18.1			34.7		
LOS by Appr:	*			D			C			D		
AllWayAvgQ:	0.0	0.0	0.0	2.1	0.0	0.1	0.2	1.0	0.0	0.0	4.2	3.3

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.626
Loss Time (sec): 12 Average Delay (sec/veh): 21.3
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0 0	0	0	1 1 0	1	0	2 0 0
Volume Module:												
Base Vol:	132	0	126	0	0	0	0	1044	205	194	471	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	132	0	126	0	0	0	0	1044	205	194	471	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	139	0	133	0	0	0	0	1099	216	204	496	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	139	0	133	0	0	0	0	1099	216	204	496	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	139	0	133	0	0	0	0	1099	216	204	496	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.67	0.33	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	2942	578	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.37	0.37	0.11	0.14	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.59	0.59	0.18	0.77	0.00
Volume/Cap:	0.59	0.00	0.63	0.00	0.00	0.00	0.00	0.63	0.63	0.63	0.18	0.00
Delay/Veh:	52.9	0.0	55.2	0.0	0.0	0.0	0.0	16.7	16.7	49.7	3.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	52.9	0.0	55.2	0.0	0.0	0.0	0.0	16.7	16.7	49.7	3.7	0.0
LOS by Move:	D	A	E	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	6	0	6	0	0	0	0	17	17	7	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec): 0 Critical Vol./Cap.(X): 0.402
Loss Time (sec): 0 Average Delay (sec/veh): 9.9
Optimal Cycle: 0 Level Of Service: A

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Ignore				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	1	0 1	0	1	0	1	0 0	1	0	1	0 0	1	0	0	1! 0	0
Volume Module:																
Base Vol:	40	175	8		7	271	93		44	1	27		1	1	2	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	40	175	8		7	271	93		44	1	27		1	1	2	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	0.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.00		0.95	0.95	0.95	
PHF Volume:	42	184	8		7	285	98		46	1	0		1	1	2	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	42	184	8		7	285	98		46	1	0		1	1	2	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	0.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	0.00		1.00	1.00	1.00	
FinalVolume:	42	184	8		7	285	98		46	1	0		1	1	2	
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	1.00	1.00		0.03	0.97	1.00		0.98	0.02	1.00		0.25	0.25	0.50	
Final Sat.:	596	655	743		18	710	848		515	12	635		145	145	290	
Capacity Analysis Module:																
Vol/Sat:	0.07	0.28	0.01		0.40	0.40	0.12		0.09	0.09	0.00		0.01	0.01	0.01	
Crit Moves:		****				****				****				****		
Delay/Veh:	9.0	10.2	7.5		10.8	10.8	7.4		9.7	9.7	0.0		8.7	8.7	8.7	
Delay Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	9.0	10.2	7.5		10.8	10.8	7.4		9.7	9.7	0.0		8.7	8.7	8.7	
LOS by Move:	A	B	A		B	B	A		A	A	*		A	A	A	
ApproachDel:		9.9				9.9				9.7				8.7		
Delay Adj:		1.00				1.00				1.00				1.00		
ApprAdjDel:		9.9				9.9				9.7				8.7		
LOS by Appr:		A				A				A				A		
AllWayAvgQ:	0.1	0.4	0.0		0.6	0.6	0.1		0.1	0.1	0.0		0.0	0.0	0.0	

Note: Queue reported is the number of cars per lane.

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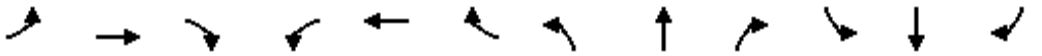

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	659	36	183	723	52	32	54	276	377	35	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3508		1770	3539	1544	1770	1863	1561	3433	1863	1555
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3508		1770	3539	1544	1770	1863	1561	3433	1863	1555
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	57	694	38	193	761	55	34	57	291	397	37	111
RTOR Reduction (vph)	0	4	0	0	0	27	0	0	20	0	0	62
Lane Group Flow (vph)	57	728	0	193	761	28	34	57	271	397	37	49
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	8.3	33.3		17.9	42.9	61.9	7.7	33.8	51.7	19.0	45.1	53.4
Effective Green, g (s)	8.3	33.3		17.9	42.9	61.9	7.7	33.8	51.7	19.0	45.1	53.4
Actuated g/C Ratio	0.07	0.28		0.15	0.36	0.52	0.06	0.28	0.43	0.16	0.38	0.44
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	122	973		264	1265	848	114	525	725	544	700	692
v/s Ratio Prot	0.03	c0.21		c0.11	0.22	0.01	0.02	0.03	c0.06	c0.12	0.02	0.00
v/s Ratio Perm						0.01			0.12			0.03
v/c Ratio	0.47	0.75		0.73	0.60	0.03	0.30	0.11	0.37	0.73	0.05	0.07
Uniform Delay, d1	53.7	39.5		48.8	31.6	14.3	53.6	31.9	23.2	48.1	23.8	19.1
Progression Factor	1.00	1.00		0.86	0.66	0.38	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	5.3		5.5	1.1	0.0	6.6	0.4	0.3	8.4	0.1	0.0
Delay (s)	56.5	44.8		47.5	22.1	5.5	60.1	32.4	23.5	56.4	24.0	19.1
Level of Service	E	D		D	C	A	E	C	C	E	C	B
Approach Delay (s)		45.6			26.1			28.1			46.6	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	36.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.715
Loss Time (sec):	12	Average Delay (sec/veh):	25.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0	1 0	0 1	0	0 1	0	1	0 2	0 0
Volume Module:												
Base Vol:	0	0	0	106	0	332	0	533	633	44	336	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	106	0	332	0	533	633	44	336	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	112	0	349	0	561	666	46	354	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	112	0	349	0	561	666	46	354	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	112	0	349	0	561	666	46	354	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.87	0.87	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1659	1659	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.22	0.00	0.34	0.40	0.03	0.10	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.53	0.53	0.08	0.61	0.00
Volume/Cap:	0.00	0.00	0.00	0.22	0.00	0.76	0.00	0.64	0.76	0.31	0.16	0.00
Delay/Veh:	0.0	0.0	0.0	32.8	0.0	46.1	0.0	20.7	24.2	52.9	9.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.8	0.0	46.1	0.0	20.7	24.2	52.9	9.9	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	D	A	A
HCM2kAvgQ:	0	0	0	3	0	13	0	15	20	2	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.091
Loss Time (sec):	12	Average Delay (sec/veh):	74.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	442	0	511	373	941	0	0	583	171
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	442	0	511	373	941	0	0	583	171
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	465	0	538	393	991	0	0	614	180
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	465	0	538	393	991	0	0	614	180
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	465	0	538	393	991	0	0	614	180
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.97	0.97
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.77	0.23
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1424	418
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.26	0.00	0.33	0.22	0.52	0.00	0.00	0.43	0.43
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.31	0.20	0.59	0.00	0.00	0.40	0.40
Volume/Cap:	0.00	0.00	0.00	0.84	0.00	1.09	1.09	0.88	0.00	0.00	1.09	1.09
Delay/Veh:	0.0	0.0	0.0	50.4	0.0	109.0	122.1	28.6	0.0	0.0	97.1	97.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	50.4	0.0	109.0	122.1	28.6	0.0	0.0	97.1	97.1
LOS by Move:	A	A	A	D	A	F	F	C	A	A	F	F
HCM2kAvgQ:	0	0	0	18	0	29	20	33	0	0	38	38

Note: Queue reported is the number of cars per lane.

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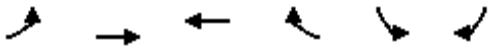

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	373	941	583	171	442	511
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.97		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	1863	1806		1770	1556
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	1863	1806		1770	1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	393	991	614	180	465	538
RTOR Reduction (vph)	0	0	9	0	0	276
Lane Group Flow (vph)	393	991	785	0	465	262
Confl. Peds. (#/hr)						5
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	15.0	77.0	58.0		35.0	35.0
Effective Green, g (s)	15.0	77.0	58.0		35.0	35.0
Actuated g/C Ratio	0.12	0.64	0.48		0.29	0.29
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	429	1195	873		516	454
v/s Ratio Prot	0.11	c0.53	c0.43		c0.26	
v/s Ratio Perm						0.17
v/c Ratio	0.92	0.83	0.90		0.90	0.58
Uniform Delay, d1	51.9	16.5	28.3		40.8	36.2
Progression Factor	0.75	0.41	0.18		1.00	1.00
Incremental Delay, d2	19.1	5.0	9.6		21.5	5.3
Delay (s)	58.0	11.7	14.7		62.3	41.5
Level of Service	E	B	B		E	D
Approach Delay (s)		24.9	14.7		51.1	
Approach LOS		C	B		D	

Intersection Summary			
HCM Average Control Delay	30.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2014 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.319
Loss Time (sec):	12	Average Delay (sec/veh):	29.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	220	0	24	0	0	0	283	359	0	0	158	39
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	220	0	24	0	0	0	283	359	0	0	158	39
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	232	0	25	0	0	0	298	378	0	0	166	41
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	232	0	25	0	0	0	298	378	0	0	166	41
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	232	0	25	0	0	0	298	378	0	0	166	41
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.94	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	0.92
Lanes:	0.90	0.00	0.10	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.60	0.40
Final Sat.:	1618	0	177	0	0	0	3502	1900	0	0	2808	693
Capacity Analysis Module:												
Vol/Sat:	0.14	0.00	0.14	0.00	0.00	0.00	0.09	0.20	0.00	0.00	0.06	0.06
Crit Moves:			****				****				****	
Green/Cycle:	0.45	0.00	0.45	0.00	0.00	0.00	0.27	0.45	0.00	0.00	0.19	0.19
Volume/Cap:	0.32	0.00	0.32	0.00	0.00	0.00	0.32	0.44	0.00	0.00	0.32	0.32
Delay/Veh:	21.6	0.0	21.6	0.0	0.0	0.0	35.5	22.9	0.0	0.0	42.6	42.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	21.6	0.0	21.6	0.0	0.0	0.0	35.5	22.9	0.0	0.0	42.6	42.6
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	6	0	6	0	0	0	4	9	0	0	4	4

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.763
Loss Time (sec):	12	Average Delay (sec/veh):	31.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	222	0	203	0	0	0	448	937	0	0	529	387
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	222	0	203	0	0	0	448	937	0	0	529	387
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	234	0	214	0	0	0	472	986	0	0	557	407
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	234	0	214	0	0	0	472	986	0	0	557	407
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	234	0	214	0	0	0	472	986	0	0	557	407
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.13	0.00	0.13	0.00	0.00	0.00	0.26	0.52	0.00	0.00	0.29	0.25
Crit Moves:			****				****				****	
Green/Cycle:	0.17	0.00	0.17	0.00	0.00	0.00	0.34	0.73	0.00	0.00	0.38	0.38
Volume/Cap:	0.75	0.00	0.76	0.00	0.00	0.00	0.76	0.71	0.00	0.00	0.76	0.66
Delay/Veh:	56.4	0.0	59.0	0.0	0.0	0.0	40.7	11.1	0.0	0.0	37.0	33.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	56.4	0.0	59.0	0.0	0.0	0.0	40.7	11.1	0.0	0.0	37.0	33.0
LOS by Move:	E	A	E	A	A	A	D	B	A	A	D	C
HCM2kAvgQ:	10	0	9	0	0	0	15	20	0	0	18	12

Note: Queue reported is the number of cars per lane.

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Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.480
Loss Time (sec):	12	Average Delay (sec/veh):	24.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	136	0	472	565	567	0	0	429	111
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	136	0	472	565	567	0	0	429	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	143	0	497	595	597	0	0	452	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	143	0	497	595	597	0	0	452	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	143	0	497	595	597	0	0	452	117
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.17	0.17	0.17	0.00	0.00	0.09	0.07
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.36	0.00	0.72	0.35	0.54	0.00	0.00	0.18	0.18
Volume/Cap:	0.00	0.00	0.00	0.22	0.00	0.24	0.48	0.31	0.00	0.00	0.48	0.40
Delay/Veh:	0.0	0.0	0.0	26.5	0.0	5.8	30.4	15.6	0.0	0.0	44.4	44.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	26.5	0.0	5.8	30.4	15.6	0.0	0.0	44.4	44.2
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	4	0	4	8	6	0	0	5	4

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.642
Loss Time (sec): 16 Average Delay (sec/veh): 39.5
Optimal Cycle: OPTIMIZED Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0 1	0 1		1 0 1	1 0		1 0 1	0 1		1 0 2	1 0	
Volume Module:												
Base Vol:	194	201	42	282	388	60	34	391	288	110	271	83
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	194	201	42	282	388	60	34	391	288	110	271	83
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	204	212	44	297	408	63	36	412	303	116	285	87
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	204	212	44	297	408	63	36	412	303	116	285	87
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	204	212	44	297	408	63	36	412	303	116	285	87
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.93	0.93	0.95	1.00	0.85	0.95	0.88	0.88
Lanes:	2.00	1.00	1.00	1.00	1.73	0.27	1.00	1.00	1.00	1.00	2.30	0.70
Final Sat.:	3502	1900	1615	1805	3064	474	1805	1900	1615	1805	3832	1174
Capacity Analysis Module:												
Vol/Sat:	0.06	0.11	0.03	0.16	0.13	0.13	0.02	0.22	0.19	0.06	0.07	0.07
Crit Moves:		****		****				****		****		
Green/Cycle:	0.14	0.17	0.17	0.26	0.29	0.29	0.15	0.34	0.34	0.10	0.29	0.29
Volume/Cap:	0.41	0.64	0.16	0.64	0.47	0.47	0.14	0.64	0.56	0.64	0.26	0.26
Delay/Veh:	47.3	50.4	42.4	42.8	35.6	35.6	44.9	35.9	33.7	59.6	32.6	32.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.3	50.4	42.4	42.8	35.6	35.6	44.9	35.9	33.7	59.6	32.6	32.6
LOS by Move:	D	D	D	D	D	D	D	D	C	E	C	C
HCM2kAvgQ:	4	8	1	10	8	8	1	13	9	5	4	4

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.315
Loss Time (sec):	12	Average Delay (sec/veh):	23.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	12	0	231	0	0	0	0	307	5	264	367	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	0	231	0	0	0	0	307	5	264	367	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	13	0	243	0	0	0	0	323	5	278	386	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	0	243	0	0	0	0	323	5	278	386	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	13	0	243	0	0	0	0	323	5	278	386	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.97	0.03	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3545	58	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.01	0.00	0.15	0.00	0.00	0.00	0.00	0.09	0.09	0.15	0.11	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.48	0.00	0.48	0.00	0.00	0.00	0.00	0.25	0.25	0.17	0.42	0.00
Volume/Cap:	0.01	0.00	0.32	0.00	0.00	0.00	0.00	0.36	0.36	0.92	0.26	0.00
Delay/Veh:	8.2	0.0	9.9	0.0	0.0	0.0	0.0	18.8	18.8	57.2	11.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	0.0	9.9	0.0	0.0	0.0	0.0	18.8	18.8	57.2	11.5	0.0
LOS by Move:	A	A	A	A	A	A	A	B	B	E	B	A
HCM2kAvgQ:	0	0	3	0	0	0	0	3	3	9	3	0

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 7.3 Worst Case Level Of Service: A[9.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1	0	0	0 1	0	0	0 0	0	0	0 0	0	1
Volume Module:												
Base Vol:	0	24	0	224	45	0	0	0	0	0	0	219
Growth Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	24	0	224	45	0	0	0	0	0	0	219
User Adj:	1.00 1.00	1.00	1.00	1.00	1.00	1.00	1.00 1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95 0.95	0.95	0.95	0.95	0.95	0.95	0.95 0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	25	0	236	47	0	0	0	0	0	0	231
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	25	0	236	47	0	0	0	0	0	0	231
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	25	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	25
Potent Cap.:	xxxx	xxxx	xxxxx	1602	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1057
Move Cap.:	xxxx	xxxx	xxxxx	1602	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	1057
Volume/Cap:	xxxx	xxxx	xxxx	0.15	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	0.22
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.5	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	0.8
Control Del:	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	9.4
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	A
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.5	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.6	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	*	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			9.4		
ApproachLOS:	*			*			*			A		

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Average Delay (sec/veh): 2.7 Worst Case Level Of Service: B[13.8]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 1	0	0	0 0 0	1	0	1 0 0	0	0	0 0 0	0	0
Volume Module:												
Base Vol:	0 243	0		0 209	45		120	0		0	0	
Growth Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
Initial Bse:	0 243	0		0 209	45		120	0		0	0	
User Adj:	1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00		1.00 1.00	1.00	
PHF Adj:	0.95 0.95	0.95		0.95 0.95	0.95		0.95 0.95	0.95		0.95 0.95	0.95	
PHF Volume:	0 256	0		0 220	47		126	0		0	0	
Reduct Vol:	0 0	0		0 0	0		0	0		0	0	
FinalVolume:	0 256	0		0 220	47		126	0		0	0	
Critical Gap Module:												
Critical Gp:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		6.4 xxxx	xxxxx		xxxxx xxxx	xxxxx	
FollowUpTim:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		3.5 xxxx	xxxxx		xxxxx xxxx	xxxxx	
Capacity Module:												
Cnflict Vol:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		499 xxxx	xxxxx		xxxx xxxx	xxxxx	
Potent Cap.:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		534 xxxx	xxxxx		xxxx xxxx	xxxxx	
Move Cap.:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		534 xxxx	xxxxx		xxxx xxxx	xxxxx	
Volume/Cap:	xxxx xxxx	xxxx		xxxx xxxx	xxxx		0.24 xxxx	xxxx		xxxx xxxx	xxxx	
Level Of Service Module:												
2Way95thQ:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		0.9 xxxx	xxxxx		xxxx xxxx	xxxxx	
Control Del:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		13.8 xxxx	xxxxx		xxxxx xxxx	xxxxx	
LOS by Move:	*	*		*	*		B	*		*	*	
Movement:	LT - LTR	- RT		LT - LTR	- RT		LT - LTR	- RT		LT - LTR	- RT	
Shared Cap.:	xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		xxxx xxxx	xxxxx		xxxx xxxx	xxxxx	
SharedQueue:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx	
Shrd ConDel:	xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx		xxxxx xxxx	xxxxx	
Shared LOS:	*	*		*	*		*	*		*	*	
ApproachDel:	xxxxxx			xxxxxx			13.8			xxxxxx		
ApproachLOS:	*			*			B			*		

Note: Queue reported is the number of cars per lane.

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APPENDIX 5.4

2019 Without Project Conditions
Intersection Operations Analysis Worksheets

Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.306
Loss Time (sec):	0	Average Delay (sec/veh):	70.4
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	111	242	307	180	149	4	5	159	101	141	87	152
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	111	242	307	180	149	4	5	159	101	141	87	152
Added Vol:	-24	-12	-77	0	-24	0	0	0	-33	-31	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	87	230	230	180	125	4	5	159	68	110	87	152
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	115	305	305	238	166	5	7	211	90	146	115	201
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	115	305	305	238	166	5	7	211	90	146	115	201
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	115	305	305	238	166	5	7	211	90	146	115	201
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.50	0.50	1.00	0.97	0.03	1.00	0.70	0.30	1.00	1.00	1.00
Final Sat.:	412	233	233	397	407	13	384	294	126	368	387	419
Capacity Analysis Module:												
Vol/Sat:	0.28	1.31	1.31	0.60	0.41	0.41	0.02	0.72	0.72	0.40	0.30	0.48
Crit Moves:		****		****				****				****
Delay/Veh:	14.5	176	175.7	23.7	16.5	16.5	12.0	28.9	28.9	18.3	15.5	18.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.5	176	175.7	23.7	16.5	16.5	12.0	28.9	28.9	18.3	15.5	18.3
LOS by Move:	B	F	F	C	C	C	B	D	D	C	C	C
ApproachDel:	150.0			20.7			28.5			17.6		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	150.0			20.7			28.5			17.6		
LOS by Appr:	F			C			D			C		
AllWayAvgQ:	0.4	21.4	21.4	1.3	0.6	0.6	0.0	2.1	2.1	0.6	0.4	0.8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.661
Loss Time (sec):	8	Average Delay (sec/veh):	13.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Permitted				Permitted				Permitted				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	15	15		15	15	15		15	15	15		15	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0 0	1	0	1	0 0	1	0	1	0 0	1	0	1	0	1	0 1
Volume Module:																
Base Vol:	111	242	307		180	149	4		5	159	101		141	87	152	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	111	242	307		180	149	4		5	159	101		141	87	152	
Added Vol:	-24	-12	-77		0	-24	0		0	0	-33		-31	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	87	230	230		180	125	4		5	159	68		110	87	152	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.76	0.76	0.76		0.76	0.76	0.76		0.76	0.76	0.76		0.76	0.76	0.76	
PHF Volume:	115	305	305		238	166	5		7	211	90		146	115	201	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	115	305	305		238	166	5		7	211	90		146	115	201	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	115	305	305		238	166	5		7	211	90		146	115	201	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.64	0.93	0.93		0.32	1.00	1.00		0.68	0.96	0.96		0.41	1.00	0.85	
Lanes:	1.00	0.50	0.50		1.00	0.97	0.03		1.00	0.70	0.30		1.00	1.00	1.00	
Final Sat.:	1220	879	879		616	1832	59		1290	1271	544		785	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.09	0.35	0.35		0.39	0.09	0.09		0.01	0.17	0.17		0.19	0.06	0.12	
Crit Moves:					****								****			
Green/Cycle:	0.59	0.59	0.59		0.59	0.59	0.59		0.28	0.28	0.28		0.28	0.28	0.28	
Volume/Cap:	0.16	0.59	0.59		0.66	0.15	0.15		0.02	0.59	0.59		0.66	0.22	0.44	
Delay/Veh:	5.8	8.8	8.8		12.9	5.7	5.7		15.6	20.4	20.4		26.3	16.7	18.4	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	5.8	8.8	8.8		12.9	5.7	5.7		15.6	20.4	20.4		26.3	16.7	18.4	
LOS by Move:	A	A	A		B	A	A		B	C	C		C	B	B	
HCM2kAvgQ:	1	8	8		4	1	1		0	6	6		4	2	4	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.216
Loss Time (sec):	0	Average Delay (sec/veh):	8.5
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	6	233	12	23	245	11	41	8	25	12	2	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	233	12	23	245	11	41	8	25	12	2	30
Added Vol:	0	-118	0	0	-107	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	115	12	23	138	11	41	8	25	12	2	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	121	13	24	145	12	43	8	26	13	2	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	121	13	24	145	12	43	8	26	13	2	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	121	13	24	145	12	43	8	26	13	2	32
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.91	0.09	1.00	0.93	0.07	0.55	0.11	0.34	0.27	0.05	0.68
Final Sat.:	648	655	68	653	673	54	407	79	248	209	35	521
Capacity Analysis Module:												
Vol/Sat:	0.01	0.18	0.18	0.04	0.22	0.22	0.11	0.11	0.11	0.06	0.06	0.06
Crit Moves:		****				****	****				****	
Delay/Veh:	8.2	8.6	8.6	8.3	8.8	8.8	8.1	8.1	8.1	7.7	7.7	7.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.2	8.6	8.6	8.3	8.8	8.8	8.1	8.1	8.1	7.7	7.7	7.7
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:		8.6			8.8			8.1			7.7	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		8.6			8.8			8.1			7.7	
LOS by Appr:		A			A			A			A	
AllWayAvgQ:	0.0	0.2	0.2	0.0	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.366
Loss Time (sec):	0	Average Delay (sec/veh):	11.3
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	222	0	73	58	681	0	0	462	178
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	222	0	73	58	681	0	0	462	178
Added Vol:	0	0	0	-45	0	-62	-51	-377	0	0	-150	-67
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	177	0	11	7	304	0	0	312	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	186	0	12	7	320	0	0	328	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	186	0	12	7	320	0	0	328	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	186	0	12	7	320	0	0	328	117
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.48	0.52
Final Sat.:	0	0	0	510	0	607	525	1143	0	0	949	353
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.37	xxxx	0.02	0.01	0.28	xxxx	xxxx	0.35	0.33
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	13.0	0.0	8.4	9.4	11.1	0.0	0.0	10.9	10.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	13.0	0.0	8.4	9.4	11.1	0.0	0.0	10.9	10.4
LOS by Move:	*	*	*	B	*	A	A	B	*	*	B	B
ApproachDel:	xxxxxx			12.7			11.1			10.8		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			12.7			11.1			10.8		
LOS by Appr:	*			B			B			B		
AllWayAvgQ:	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.4	0.0	0.0	0.5	0.5

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.474
Loss Time (sec): 12 Average Delay (sec/veh): 17.4
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	210	0	179	0	0	0	0	875	112	92	839	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	210	0	179	0	0	0	0	875	112	92	839	0
Added Vol:	-27	0	-26	0	0	0	0	0	-39	-23	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	183	0	153	0	0	0	0	875	73	69	839	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	193	0	161	0	0	0	0	921	77	73	883	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	193	0	161	0	0	0	0	921	77	73	883	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	193	0	161	0	0	0	0	921	77	73	883	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.94	0.94	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.85	0.15	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3292	275	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.11	0.00	0.10	0.00	0.00	0.00	0.00	0.28	0.28	0.04	0.24	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.23	0.00	0.23	0.00	0.00	0.00	0.00	0.59	0.59	0.08	0.67	0.00
Volume/Cap:	0.47	0.00	0.44	0.00	0.00	0.00	0.00	0.47	0.47	0.47	0.36	0.00
Delay/Veh:	41.2	0.0	40.9	0.0	0.0	0.0	0.0	14.2	14.2	54.7	8.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	41.2	0.0	40.9	0.0	0.0	0.0	0.0	14.2	14.2	54.7	8.5	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	6	0	5	0	0	0	0	11	11	3	7	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.230
Loss Time (sec):	0	Average Delay (sec/veh):	9.0
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0	1! 0 0
Volume Module:												
Base Vol:	21	203	7	9	188	35	84	4	48	1	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	21	203	7	9	188	35	84	4	48	1	1	1
Added Vol:	-4	-54	0	0	-62	0	0	0	-14	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	17	149	7	9	126	35	84	4	34	1	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	18	157	7	9	133	37	88	4	0	1	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	18	157	7	9	133	37	88	4	0	1	1	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	18	157	7	9	133	37	88	4	0	1	1	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.07	0.93	1.00	0.95	0.05	1.00	0.34	0.33	0.33
Final Sat.:	621	683	783	47	661	825	561	27	726	210	210	210
Capacity Analysis Module:												
Vol/Sat:	0.03	0.23	0.01	0.20	0.20	0.04	0.16	0.16	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	8.5	9.4	7.2	8.9	8.9	7.1	9.6	9.6	0.0	8.4	8.4	8.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.5	9.4	7.2	8.9	8.9	7.1	9.6	9.6	0.0	8.4	8.4	8.4
LOS by Move:	A	A	A	A	A	A	A	A	*	A	A	A
ApproachDel:	9.2			8.5			9.6			8.4		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.2			8.5			9.6			8.4		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.0	0.3	0.0	0.2	0.2	0.0	0.2	0.2	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.228
Loss Time (sec): 12 Average Delay (sec/veh): 18.6
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	1	0 1	0	1	0 1	1	0	0 1 1 0 1
Volume Module:												
Base Vol:	68	58	325	123	75	81	47	809	47	417	489	80
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	68	58	325	123	75	81	47	809	47	417	489	80
Added Vol:	-68	-58	-325	0	-75	0	0	-375	-47	-417	-148	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	123	0	81	47	434	0	0	341	80
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	129	0	85	49	457	0	0	359	84
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	129	0	85	49	457	0	0	359	84
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	129	0	85	49	457	0	0	359	84
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.87	0.95	0.87	0.95	0.95	0.95	0.95	0.95	0.85
Lanes:	0.00	1.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	1900	0	1647	0	1647	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.05	0.03	0.13	0.00	0.00	0.10	0.05
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.34	0.00	0.46	0.12	0.56	0.00	0.00	0.44	0.78
Volume/Cap:	0.00	0.00	0.00	0.23	0.00	0.11	0.23	0.23	0.00	0.00	0.23	0.07
Delay/Veh:	0.0	0.0	0.0	28.1	0.0	18.2	48.3	13.6	0.0	0.0	21.3	3.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	28.1	0.0	18.2	48.3	13.6	0.0	0.0	21.3	3.1
LOS by Move:	A	A	A	C	A	B	D	B	A	A	C	A
HCM2kAvgQ:	0	0	0	4	0	2	2	4	0	0	4	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.635
Loss Time (sec): 12 Average Delay (sec/veh): 24.3
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	0 1	0 0	1	0 0	1 1	0	1 0	2 0	0
Volume Module:												
Base Vol:	0	0	0	108	0	297	0	725	327	109	651	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	108	0	297	0	725	327	109	651	0
Added Vol:	0	0	0	0	0	0	0	-26	0	0	-23	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	108	0	297	0	699	327	109	628	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	114	0	313	0	736	344	115	661	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	114	0	313	0	736	344	115	661	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	114	0	313	0	736	344	115	661	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.90	0.90	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.36	0.64	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2341	1095	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.19	0.00	0.31	0.31	0.06	0.18	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.30	0.00	0.30	0.00	0.50	0.50	0.10	0.60	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.63	0.00	0.63	0.63	0.64	0.31	0.00
Delay/Veh:	0.0	0.0	0.0	31.1	0.0	38.7	0.0	23.1	23.1	59.1	12.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	31.1	0.0	38.7	0.0	23.1	23.1	59.1	12.1	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	E	B	A
HCM2kAvgQ:	0	0	0	3	0	11	0	15	15	4	6	0

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.498
Loss Time (sec): 12 Average Delay (sec/veh): 26.3
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	271	0	518	285	971	0	0	533	106
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	271	0	518	285	971	0	0	533	106
Added Vol:	0	0	0	0	0	-310	-166	-534	0	0	-256	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	271	0	208	119	437	0	0	277	106
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	285	0	219	125	460	0	0	292	112
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	285	0	219	125	460	0	0	292	112
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	285	0	219	125	460	0	0	292	112
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.96	0.96
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.72	0.28
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1323	506
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.16	0.00	0.14	0.07	0.24	0.00	0.00	0.22	0.22
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.32	0.00	0.32	0.14	0.58	0.00	0.00	0.44	0.44
Volume/Cap:	0.00	0.00	0.00	0.50	0.00	0.43	0.50	0.42	0.00	0.00	0.50	0.50
Delay/Veh:	0.0	0.0	0.0	33.9	0.0	32.9	49.3	14.1	0.0	0.0	24.4	24.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.9	0.0	32.9	49.3	14.1	0.0	0.0	24.4	24.4
LOS by Move:	A	A	A	C	A	C	D	B	A	A	C	C
HCM2kAvgQ:	0	0	0	9	0	6	4	9	0	0	10	10

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.708
Loss Time (sec): 12 Average Delay (sec/veh): 37.3
Optimal Cycle: OPTIMIZED Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1	0	0	0	0	1	1	0
Volume Module:												
Base Vol:	382	0	136	0	0	0	497	335	0	0	376	226
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	382	0	136	0	0	0	497	335	0	0	376	226
Added Vol:	0	0	0	0	0	0	0	-26	0	0	-23	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	382	0	136	0	0	0	497	309	0	0	353	226
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	402	0	143	0	0	0	523	325	0	0	372	238
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	402	0	143	0	0	0	523	325	0	0	372	238
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	402	0	143	0	0	0	523	325	0	0	372	238
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.89	0.89
Lanes:	0.74	0.00	0.26	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.22	0.78
Final Sat.:	1302	0	464	0	0	0	3502	1900	0	0	2073	1327
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.31	0.00	0.00	0.00	0.15	0.17	0.00	0.00	0.18	0.18
Crit Moves:	****						****				****	
Green/Cycle:	0.44	0.00	0.44	0.00	0.00	0.00	0.21	0.46	0.00	0.00	0.25	0.25
Volume/Cap:	0.71	0.00	0.71	0.00	0.00	0.00	0.71	0.37	0.00	0.00	0.71	0.71
Delay/Veh:	30.7	0.0	30.7	0.0	0.0	0.0	47.1	21.1	0.0	0.0	43.5	43.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	30.7	0.0	30.7	0.0	0.0	0.0	47.1	21.1	0.0	0.0	43.5	43.5
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	17	0	17	0	0	0	9	7	0	0	12	12

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.799
Loss Time (sec): 12 Average Delay (sec/veh): 29.7
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Split Phase				Split Phase				Protected				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	0	15		0	0	0		10	15	0		0	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	0	1 0	0	1	0	0 0	0	0	1	0 1	0	0	0	0 1	0	1
Volume Module:																
Base Vol:	241	0	62		0	0	0		742	502	0		0	404	730	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	241	0	62		0	0	0		742	502	0		0	404	730	
Added Vol:	-147	0	0		0	0	0		-418	-116	0		0	-109	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	94	0	62		0	0	0		324	386	0		0	295	730	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	99	0	65		0	0	0		341	406	0		0	311	768	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	99	0	65		0	0	0		341	406	0		0	311	768	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	99	0	65		0	0	0		341	406	0		0	311	768	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	1.00	0.85		1.00	1.00	1.00		0.95	1.00	1.00		1.00	1.00	0.85	
Lanes:	1.00	0.00	1.00		0.00	0.00	0.00		1.00	1.00	0.00		0.00	1.00	1.00	
Final Sat.:	1809	0	1615		0	0	0		1805	1900	0		0	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.05	0.00	0.04		0.00	0.00	0.00		0.19	0.21	0.00		0.00	0.16	0.48	
Crit Moves:	****								****						****	
Green/Cycle:	0.13	0.00	0.13		0.00	0.00	0.00		0.22	0.78	0.00		0.00	0.55	0.55	
Volume/Cap:	0.44	0.00	0.32		0.00	0.00	0.00		0.86	0.28	0.00		0.00	0.29	0.86	
Delay/Veh:	50.0	0.0	48.8		0.0	0.0	0.0		61.7	4.0	0.0		0.0	14.4	31.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	50.0	0.0	48.8		0.0	0.0	0.0		61.7	4.0	0.0		0.0	14.4	31.0	
LOS by Move:	D	A	D		A	A	A		E	A	A		A	B	C	
HCM2kAvgQ:	4	0	2		0	0	0		13	4	0		0	6	25	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.276
Loss Time (sec): 12 Average Delay (sec/veh): 15.3
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	31	0	94	162	402	0	0	1029	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	31	0	94	162	402	0	0	1029	70
Added Vol:	0	0	0	0	0	-5	-20	-96	0	0	-104	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	31	0	89	142	306	0	0	925	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	33	0	94	149	322	0	0	974	74
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	33	0	94	149	322	0	0	974	74
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	33	0	94	149	322	0	0	974	74
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.02	0.00	0.03	0.04	0.09	0.00	0.00	0.19	0.05
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.30	0.14	0.73	0.00	0.00	0.60	0.60
Volume/Cap:	0.00	0.00	0.00	0.11	0.00	0.11	0.31	0.12	0.00	0.00	0.31	0.08
Delay/Veh:	0.0	0.0	0.0	42.6	0.0	30.2	47.2	4.7	0.0	0.0	12.0	10.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.6	0.0	30.2	47.2	4.7	0.0	0.0	12.0	10.2
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	B
HCM2kAvgQ:	0	0	0	1	0	1	2	2	0	0	6	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.757
Loss Time (sec):	16	Average Delay (sec/veh):	41.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	10	20	20		10	20	20		10	20	20		10	20	20	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0 1	0	1	1	0 1	1	0	1	0 1	0	1	1	0 2	1	0
Volume Module:																
Base Vol:	543	721	222		82	78	61		31	383	121		47	493	262	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	543	721	222		82	78	61		31	383	121		47	493	262	
Added Vol:	-31	0	0		0	0	-18		-12	-56	-28		0	-56	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	512	721	222		82	78	43		19	327	93		47	437	262	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	539	759	234		86	82	45		20	344	98		49	460	276	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	539	759	234		86	82	45		20	344	98		49	460	276	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	539	759	234		86	82	45		20	344	98		49	460	276	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.92	1.00	0.85		0.95	0.90	0.90		0.95	1.00	0.85		0.95	0.86	0.86	
Lanes:	2.00	1.00	1.00		1.00	1.29	0.71		1.00	1.00	1.00		1.00	2.00	1.00	
Final Sat.:	3502	1900	1615		1805	2204	1215		1805	1900	1615		1805	3264	1632	
Capacity Analysis Module:																
Vol/Sat:	0.15	0.40	0.14		0.05	0.04	0.04		0.01	0.18	0.06		0.03	0.14	0.17	
Crit Moves:		****			****					****			****			
Green/Cycle:	0.27	0.48	0.48		0.08	0.29	0.29		0.10	0.22	0.22		0.08	0.20	0.20	
Volume/Cap:	0.57	0.83	0.30		0.57	0.13	0.13		0.11	0.83	0.28		0.33	0.70	0.84	
Delay/Veh:	38.5	33.3	19.1		58.3	31.1	31.1		49.5	57.9	39.4		53.1	46.5	53.0	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	38.5	33.3	19.1		58.3	31.1	31.1		49.5	57.9	39.4		53.1	46.5	53.0	
LOS by Move:	D	C	B		E	C	C		D	E	D		D	D	D	
HCM2kAvgQ:	9	26	5		4	2	2		1	13	3		2	10	13	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.420
Loss Time (sec):	0	Average Delay (sec/veh):	11.9
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	129	105	171	29	117	1	3	76	204	271	104	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	129	105	171	29	117	1	3	76	204	271	104	19
Added Vol:	-61	-29	-46	0	-20	0	0	0	-54	-70	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	68	76	125	29	97	1	3	76	150	201	104	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	72	80	132	31	102	1	3	80	158	212	109	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	72	80	132	31	102	1	3	80	158	212	109	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	72	80	132	31	102	1	3	80	158	212	109	20
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.38	0.62	1.00	0.99	0.01	1.00	0.34	0.66	1.00	1.00	1.00
Final Sat.:	499	219	360	475	505	5	507	199	394	503	538	598
Capacity Analysis Module:												
Vol/Sat:	0.14	0.37	0.37	0.06	0.20	0.20	0.01	0.40	0.40	0.42	0.20	0.03
Crit Moves:		****			****				****	****		
Delay/Veh:	10.6	11.7	11.7	10.2	10.8	10.8	9.5	12.0	12.0	14.2	10.6	8.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.6	11.7	11.7	10.2	10.8	10.8	9.5	12.0	12.0	14.2	10.6	8.6
LOS by Move:	B	B	B	B	B	B	A	B	B	B	B	A
ApproachDel:	11.4			10.6			11.9			12.8		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	11.4			10.6			11.9			12.8		
LOS by Appr:	B			B			B			B		
AllWayAvgQ:	0.1	0.5	0.5	0.1	0.2	0.2	0.0	0.6	0.6	0.6	0.2	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.474
Loss Time (sec):	8	Average Delay (sec/veh):	11.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	129	105	171	29	117	1	3	76	204	271	104	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	129	105	171	29	117	1	3	76	204	271	104	19
Added Vol:	-61	-29	-46	0	-20	0	0	0	-54	-70	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	68	76	125	29	97	1	3	76	150	201	104	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	90	101	166	38	128	1	4	101	199	266	138	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	90	101	166	38	128	1	4	101	199	266	138	25
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	90	101	166	38	128	1	4	101	199	266	138	25
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.67	0.91	0.91	0.50	1.00	1.00	0.66	0.90	0.90	0.55	1.00	0.85
Lanes:	1.00	0.38	0.62	1.00	0.99	0.01	1.00	0.34	0.66	1.00	1.00	1.00
Final Sat.:	1271	652	1072	946	1879	19	1262	575	1135	1037	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.07	0.15	0.15	0.04	0.07	0.07	0.00	0.17	0.17	0.26	0.07	0.02
Crit Moves:		****								****		
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.22	0.47	0.47	0.12	0.21	0.21	0.01	0.32	0.32	0.47	0.13	0.03
Delay/Veh:	14.9	16.8	16.8	14.4	14.8	14.8	6.3	7.9	7.9	9.1	6.9	6.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.9	16.8	16.8	14.4	14.8	14.8	6.3	7.9	7.9	9.1	6.9	6.4
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	1	4	4	1	2	2	0	3	3	4	1	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.410
Loss Time (sec):	0	Average Delay (sec/veh):	10.1
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	32	360	32	15	408	31	14	6	32	10	12	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	360	32	15	408	31	14	6	32	10	12	48
Added Vol:	0	-166	0	0	-163	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	32	194	32	15	245	31	14	6	32	10	12	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	34	204	34	16	258	33	15	6	34	11	13	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	34	204	34	16	258	33	15	6	34	11	13	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	34	204	34	16	258	33	15	6	34	11	13	51
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.86	0.14	1.00	0.89	0.11	0.27	0.11	0.62	0.14	0.17	0.69
Final Sat.:	631	607	100	634	630	80	174	75	398	94	113	453
Capacity Analysis Module:												
Vol/Sat:	0.05	0.34	0.34	0.02	0.41	0.41	0.08	0.08	0.08	0.11	0.11	0.11
Crit Moves:			****		****				****		****	
Delay/Veh:	8.6	10.1	10.1	8.4	11.0	11.0	8.4	8.4	8.4	8.5	8.5	8.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.6	10.1	10.1	8.4	11.0	11.0	8.4	8.4	8.4	8.5	8.5	8.5
LOS by Move:	A	B	B	A	B	B	A	A	A	A	A	A
ApproachDel:	9.9			10.9			8.4			8.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.9			10.9			8.4			8.5		
LOS by Appr:	A			B			A			A		
AllWayAvgQ:	0.1	0.5	0.5	0.0	0.7	0.7	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.600
Loss Time (sec):	0	Average Delay (sec/veh):	15.6
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	372	0	76	94	539	0	0	709	403
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	372	0	76	94	539	0	0	709	403
Added Vol:	0	0	0	-109	0	-54	-69	-232	0	0	-351	-97
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	263	0	22	25	307	0	0	358	306
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	277	0	23	26	323	0	0	377	322
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	277	0	23	26	323	0	0	377	322
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	277	0	23	26	323	0	0	377	322
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.08	0.92
Final Sat.:	0	0	0	476	0	556	458	989	0	0	628	593
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.58	xxxx	0.04	0.06	0.33	xxxx	xxxx	0.60	0.54
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	19.1	0.0	9.1	10.7	13.0	0.0	0.0	17.2	14.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	19.1	0.0	9.1	10.7	13.0	0.0	0.0	17.2	14.3
LOS by Move:	*	*	*	C	*	A	B	B	*	*	C	B
ApproachDel:	xxxxxx			18.3			12.8			15.9		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			18.3			12.8			15.9		
LOS by Appr:	*			C			B			C		
AllWayAvgQ:	0.0	0.0	0.0	1.2	0.0	0.0	0.1	0.4	0.0	0.0	1.4	1.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.645
Loss Time (sec): 12 Average Delay (sec/veh): 19.7
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0 0	0 0	0	0 1	1 0	1	0 2	0 0
Volume Module:												
Base Vol:	196	0	162	0	0	0	0	1169	274	225	538	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	196	0	162	0	0	0	0	1169	274	225	538	0
Added Vol:	-82	0	-42	0	0	0	0	0	-75	-43	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	114	0	120	0	0	0	0	1169	199	182	538	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	120	0	126	0	0	0	0	1231	209	192	566	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	120	0	126	0	0	0	0	1231	209	192	566	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	120	0	126	0	0	0	0	1231	209	192	566	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.71	0.29	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3017	514	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.07	0.00	0.08	0.00	0.00	0.00	0.00	0.41	0.41	0.11	0.16	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.62	0.62	0.16	0.78	0.00
Volume/Cap:	0.53	0.00	0.63	0.00	0.00	0.00	0.00	0.66	0.66	0.66	0.20	0.00
Delay/Veh:	51.6	0.0	55.9	0.0	0.0	0.0	0.0	15.8	15.8	53.1	3.6	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.6	0.0	55.9	0.0	0.0	0.0	0.0	15.8	15.8	53.1	3.6	0.0
LOS by Move:	D	A	E	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	5	0	5	0	0	0	0	18	18	7	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.379
Loss Time (sec):	0	Average Delay (sec/veh):	9.5
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0	1! 0 0
Volume Module:												
Base Vol:	49	265	8	7	375	95	47	1	34	1	1	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	265	8	7	375	95	47	1	34	1	1	3
Added Vol:	-19	-124	0	0	-118	0	0	0	-11	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	30	141	8	7	257	95	47	1	23	1	1	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	32	148	8	7	271	100	49	1	0	1	1	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	32	148	8	7	271	100	49	1	0	1	1	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	32	148	8	7	271	100	49	1	0	1	1	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.03	0.97	1.00	0.98	0.02	1.00	0.20	0.20	0.60
Final Sat.:	598	656	746	19	713	855	528	11	654	120	120	361
Capacity Analysis Module:												
Vol/Sat:	0.05	0.23	0.01	0.38	0.38	0.12	0.09	0.09	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	8.9	9.6	7.4	10.4	10.4	7.4	9.6	9.6	0.0	8.6	8.6	8.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.9	9.6	7.4	10.4	10.4	7.4	9.6	9.6	0.0	8.6	8.6	8.6
LOS by Move:	A	A	A	B	B	A	A	A	*	A	A	A
ApproachDel:	9.4			9.6			9.6			8.6		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	9.4			9.6			9.6			8.6		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.1	0.3	0.0	0.6	0.6	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.485
Loss Time (sec):	12	Average Delay (sec/veh):	25.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	1	0 1	0	1	0 1	1	0	0 1 1 0 1
Volume Module:												
Base Vol:	104	142	852	381	129	124	62	732	116	789	897	67
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	104	142	852	381	129	124	62	732	116	789	897	67
Added Vol:	-104	-142	-852	0	-129	0	0	-225	-116	-789	-344	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	381	0	124	62	507	0	0	553	67
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	401	0	131	65	534	0	0	582	71
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	401	0	131	65	534	0	0	582	71
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	401	0	131	65	534	0	0	582	71
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.88	0.95	0.88	0.95	0.95	0.95	0.95	0.95	0.85
Lanes:	0.00	1.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	1900	0	1676	0	1676	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.24	0.00	0.08	0.04	0.15	0.00	0.00	0.16	0.04
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.49	0.00	0.57	0.08	0.41	0.00	0.00	0.33	0.82
Volume/Cap:	0.00	0.00	0.00	0.49	0.00	0.14	0.43	0.36	0.00	0.00	0.49	0.05
Delay/Veh:	0.0	0.0	0.0	21.0	0.0	12.0	54.3	24.5	0.0	0.0	32.6	2.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	21.0	0.0	12.0	54.3	24.5	0.0	0.0	32.6	2.1
LOS by Move:	A	A	A	C	A	B	D	C	A	A	C	A
HCM2kAvgQ:	0	0	0	10	0	2	3	7	0	0	8	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.771
Loss Time (sec): 12 Average Delay (sec/veh): 27.9
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	1	0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	108	0	364	0	644	680	45	403	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	108	0	364	0	644	680	45	403	0
Added Vol:	0	0	0	0	0	0	0	-42	0	0	-43	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	108	0	364	0	602	680	45	360	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	114	0	383	0	634	716	47	379	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	114	0	383	0	634	716	47	379	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	114	0	383	0	634	716	47	379	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.87	0.87	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1662	1662	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.24	0.00	0.38	0.43	0.03	0.10	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.53	0.53	0.08	0.61	0.00
Volume/Cap:	0.00	0.00	0.00	0.22	0.00	0.82	0.00	0.72	0.82	0.32	0.17	0.00
Delay/Veh:	0.0	0.0	0.0	32.5	0.0	50.4	0.0	23.2	27.0	53.0	10.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.5	0.0	50.4	0.0	23.2	27.0	53.0	10.2	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	D	B	A
HCM2kAvgQ:	0	0	0	3	0	15	0	18	23	2	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 Without Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.893
Loss Time (sec): 12 Average Delay (sec/veh): 42.2
Optimal Cycle: OPTIMIZED Level Of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	482	0	919	571	1393	0	0	948	174
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	482	0	919	571	1393	0	0	948	174
Added Vol:	0	0	0	0	0	-643	-298	-779	0	0	-490	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	482	0	276	273	614	0	0	458	174
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	507	0	291	287	646	0	0	482	183
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	507	0	291	287	646	0	0	482	183
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	507	0	291	287	646	0	0	482	183
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.96	0.96
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.72	0.28
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1326	504
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.28	0.00	0.18	0.16	0.34	0.00	0.00	0.36	0.36
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.31	0.18	0.59	0.00	0.00	0.41	0.41
Volume/Cap:	0.00	0.00	0.00	0.89	0.00	0.57	0.89	0.58	0.00	0.00	0.89	0.89
Delay/Veh:	0.0	0.0	0.0	55.6	0.0	35.9	73.6	16.4	0.0	0.0	46.3	46.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	55.6	0.0	35.9	73.6	16.4	0.0	0.0	46.3	46.3
LOS by Move:	A	A	A	E	A	D	E	B	A	A	D	D
HCM2kAvgQ:	0	0	0	21	0	9	12	15	0	0	21	21

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.363
Loss Time (sec):	12	Average Delay (sec/veh):	30.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	256	0	35	0	0	0	323	434	0	0	189	47
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	256	0	35	0	0	0	323	434	0	0	189	47
Added Vol:	0	0	0	0	0	0	0	-42	0	0	-43	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	256	0	35	0	0	0	323	392	0	0	146	47
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	269	0	37	0	0	0	340	413	0	0	154	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	269	0	37	0	0	0	340	413	0	0	154	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	269	0	37	0	0	0	340	413	0	0	154	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.94	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.91	0.91
Lanes:	0.88	0.00	0.12	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.51	0.49
Final Sat.:	1576	0	215	0	0	0	3502	1900	0	0	2630	847
Capacity Analysis Module:												
Vol/Sat:	0.17	0.00	0.17	0.00	0.00	0.00	0.10	0.22	0.00	0.00	0.06	0.06
Crit Moves:	****						****				****	
Green/Cycle:	0.47	0.00	0.47	0.00	0.00	0.00	0.27	0.43	0.00	0.00	0.16	0.16
Volume/Cap:	0.36	0.00	0.36	0.00	0.00	0.00	0.36	0.51	0.00	0.00	0.36	0.36
Delay/Veh:	20.5	0.0	20.5	0.0	0.0	0.0	35.9	25.5	0.0	0.0	45.2	45.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	20.5	0.0	20.5	0.0	0.0	0.0	35.9	25.5	0.0	0.0	45.2	45.2
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	7	0	7	0	0	0	5	10	0	0	4	4

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.703
Loss Time (sec):	12	Average Delay (sec/veh):	49.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Split Phase				Split Phase				Protected				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	0	15		0	0	0		10	15	0		0	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	0	1 0	0	1	0	0 0	0	0	1	0 1	0	0	0	0 1	0	1
Volume Module:																
Base Vol:	458	0	217		0	0	0		805	1074	0		0	661	401	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	458	0	217		0	0	0		805	1074	0		0	661	401	
Added Vol:	-306	0	0		0	0	0		-592	-187	0		0	-184	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	152	0	217		0	0	0		213	887	0		0	477	401	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	160	0	228		0	0	0		224	934	0		0	502	422	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	160	0	228		0	0	0		224	934	0		0	502	422	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	160	0	228		0	0	0		224	934	0		0	502	422	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	1.00	0.85		1.00	1.00	1.00		0.95	1.00	1.00		1.00	1.00	0.85	
Lanes:	1.00	0.00	1.00		0.00	0.00	0.00		1.00	1.00	0.00		0.00	1.00	1.00	
Final Sat.:	1809	0	1615		0	0	0		1805	1900	0		0	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.09	0.00	0.14		0.00	0.00	0.00		0.12	0.49	0.00		0.00	0.26	0.26	
Crit Moves:			****							****						
Green/Cycle:	0.14	0.00	0.14		0.00	0.00	0.00		0.49	0.76	0.00		0.00	0.27	0.27	
Volume/Cap:	0.62	0.00	1.00		0.00	0.00	0.00		0.25	0.65	0.00		0.00	1.00	0.99	
Delay/Veh:	53.2	0.0	109.9		0.0	0.0	0.0		17.8	7.9	0.0		0.0	83.3	83.5	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	53.2	0.0	109.9		0.0	0.0	0.0		17.8	7.9	0.0		0.0	83.3	83.5	
LOS by Move:	D	A	F		A	A	A		B	A	A		A	F	F	
HCM2kAvgQ:	6	0	13		0	0	0		5	16	0		0	22	18	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.483
Loss Time (sec): 12 Average Delay (sec/veh): 24.8
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0 0	0	1 0	0 0	2	2 0	2 0	0	0 0	3 0	1
Volume Module:												
Base Vol:	0	0	0	172	0	504	594	682	0	0	555	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	172	0	504	594	682	0	0	555	121
Added Vol:	0	0	0	0	0	-18	-10	-178	0	0	-166	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	172	0	486	584	504	0	0	389	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	181	0	512	615	531	0	0	409	127
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	181	0	512	615	531	0	0	409	127
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	181	0	512	615	531	0	0	409	127
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.18	0.18	0.15	0.00	0.00	0.08	0.08
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.37	0.00	0.74	0.36	0.53	0.00	0.00	0.16	0.16
Volume/Cap:	0.00	0.00	0.00	0.27	0.00	0.24	0.48	0.28	0.00	0.00	0.48	0.48
Delay/Veh:	0.0	0.0	0.0	26.5	0.0	5.1	29.8	15.8	0.0	0.0	46.0	47.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	26.5	0.0	5.1	29.8	15.8	0.0	0.0	46.0	47.0
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	5	0	3	9	5	0	0	5	4

Note: Queue reported is the number of cars per lane.

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Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.730
Loss Time (sec):	16	Average Delay (sec/veh):	41.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	T	R		L	T	R		L	T	R		L	T	R	
Control:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				Include				Include			
Min. Green:	10	20	20		10	20	20		10	20	20		10	20	20	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	2	0 1	0	1	1	0 1	1	0	1	0 1	0	1	1	0 2	1	0
Volume Module:																
Base Vol:	227	269	44		338	416	77		59	499	320		112	340	125	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	227	269	44		338	416	77		59	499	320		112	340	125	
Added Vol:	-46	0	0		0	0	-24		-29	-99	-50		0	-96	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	181	269	44		338	416	53		30	400	270		112	244	125	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	191	283	46		356	438	56		32	421	284		118	257	132	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	191	283	46		356	438	56		32	421	284		118	257	132	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	191	283	46		356	438	56		32	421	284		118	257	132	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.92	1.00	0.85		0.95	0.93	0.93		0.95	1.00	0.85		0.95	0.86	0.86	
Lanes:	2.00	1.00	1.00		1.00	1.77	0.23		1.00	1.00	1.00		1.00	2.00	1.00	
Final Sat.:	3502	1900	1615		1805	3148	401		1805	1900	1615		1805	3282	1641	
Capacity Analysis Module:																
Vol/Sat:	0.05	0.15	0.03		0.20	0.14	0.14		0.02	0.22	0.18		0.07	0.08	0.08	
Crit Moves:		****			****					****			****			
Green/Cycle:	0.16	0.20	0.20		0.27	0.32	0.32		0.13	0.30	0.30		0.09	0.26	0.26	
Volume/Cap:	0.34	0.73	0.14		0.73	0.44	0.44		0.13	0.73	0.58		0.73	0.30	0.31	
Delay/Veh:	45.4	51.6	39.3		45.4	32.9	32.9		46.4	42.2	37.1		68.8	35.6	35.7	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	45.4	51.6	39.3		45.4	32.9	32.9		46.4	42.2	37.1		68.8	35.6	35.7	
LOS by Move:	D	D	D		D	C	C		D	D	D		E	D	D	
HCM2kAvgQ:	3	11	1		13	8	8		1	14	9		6	4	4	

Note: Queue reported is the number of cars per lane.

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APPENDIX 5.5

2019 With Project Conditions
Intersection Operations Analysis Worksheets

Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.637
Loss Time (sec):	0	Average Delay (sec/veh):	123.3
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	111	242	307	180	149	4	5	159	101	141	87	152
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	111	242	307	180	149	4	5	159	101	141	87	152
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	147	320	406	238	197	5	7	211	134	187	115	201
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	147	320	406	238	197	5	7	211	134	187	115	201
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	147	320	406	238	197	5	7	211	134	187	115	201
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.44	0.56	1.00	0.97	0.03	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	393	196	248	381	392	11	372	252	160	353	370	401
Capacity Analysis Module:												
Vol/Sat:	0.37	1.64	1.64	0.62	0.50	0.50	0.02	0.84	0.84	0.53	0.31	0.50
Crit Moves:		****		****				****		****		
Delay/Veh:	16.8	317	316.7	25.8	19.7	19.7	12.3	41.4	41.4	23.1	16.3	19.8
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.8	317	316.7	25.8	19.7	19.7	12.3	41.4	41.4	23.1	16.3	19.8
LOS by Move:	C	F	F	D	C	C	B	E	E	C	C	C
ApproachDel:	266.3			23.0			40.9			20.2		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	266.3			23.0			40.9			20.2		
LOS by Appr:	F			C			E			C		
AllWayAvgQ:	0.6	37.7	37.7	1.5	0.9	0.9	0.0	3.4	3.4	1.0	0.4	0.9

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.960
Loss Time (sec):	8	Average Delay (sec/veh):	23.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	111	242	307	180	149	4	5	159	101	141	87	152
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	111	242	307	180	149	4	5	159	101	141	87	152
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	147	320	406	238	197	5	7	211	134	187	115	201
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	147	320	406	238	197	5	7	211	134	187	115	201
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	147	320	406	238	197	5	7	211	134	187	115	201
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.62	0.92	0.92	0.22	1.00	1.00	0.68	0.94	0.94	0.38	1.00	0.85
Lanes:	1.00	0.44	0.56	1.00	0.97	0.03	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	1184	767	973	413	1843	49	1290	1095	695	730	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.12	0.42	0.42	0.58	0.11	0.11	0.01	0.19	0.19	0.26	0.06	0.12
Crit Moves:				****						****		
Green/Cycle:	0.60	0.60	0.60	0.60	0.60	0.60	0.27	0.27	0.27	0.27	0.27	0.27
Volume/Cap:	0.21	0.70	0.70	0.96	0.18	0.18	0.02	0.72	0.72	0.96	0.23	0.47
Delay/Veh:	5.6	10.3	10.3	57.2	5.4	5.4	16.3	25.4	25.4	74.6	17.4	19.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	5.6	10.3	10.3	57.2	5.4	5.4	16.3	25.4	25.4	74.6	17.4	19.3
LOS by Move:	A	B	B	E	A	A	B	C	C	E	B	B
HCM2kAvgQ:	1	10	10	9	2	2	0	8	8	7	2	4

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.382
Loss Time (sec):	0	Average Delay (sec/veh):	10.2
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	6	233	12	23	245	11	41	8	25	12	2	30
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	6	233	12	23	245	11	41	8	25	12	2	30
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	6	245	13	24	258	12	43	8	26	13	2	32
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	245	13	24	258	12	43	8	26	13	2	32
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	6	245	13	24	258	12	43	8	26	13	2	32
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.95	0.05	1.00	0.96	0.04	0.55	0.11	0.34	0.27	0.05	0.68
Final Sat.:	632	666	34	637	675	30	352	69	214	178	30	444
Capacity Analysis Module:												
Vol/Sat:	0.01	0.37	0.37	0.04	0.38	0.38	0.12	0.12	0.12	0.07	0.07	0.07
Crit Moves:		****				****	****				****	
Delay/Veh:	8.3	10.6	10.6	8.5	10.7	10.7	8.8	8.8	8.8	8.3	8.3	8.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	10.6	10.6	8.5	10.7	10.7	8.8	8.8	8.8	8.3	8.3	8.3
LOS by Move:	A	B	B	A	B	B	A	A	A	A	A	A
ApproachDel:	10.5			10.5			8.8			8.3		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.5			10.5			8.8			8.3		
LOS by Appr:	B			B			A			A		
AllWayAvgQ:	0.0	0.5	0.5	0.0	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.730
Loss Time (sec):	0	Average Delay (sec/veh):	21.8
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	222	0	73	58	681	0	0	462	178
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	222	0	73	58	681	0	0	462	178
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	234	0	77	61	717	0	0	486	187
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	234	0	77	61	717	0	0	486	187
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	234	0	77	61	717	0	0	486	187
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.44	0.56
Final Sat.:	0	0	0	430	0	492	452	982	0	0	761	305
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.54	xxxx	0.16	0.14	0.73	xxxx	xxxx	0.64	0.61
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	19.4	0.0	10.8	11.6	26.6	0.0	0.0	20.1	18.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	19.4	0.0	10.8	11.6	26.6	0.0	0.0	20.1	18.5
LOS by Move:	*	*	*	C	*	B	B	D	*	*	C	C
ApproachDel:	xxxxxx			17.3			25.4			19.7		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			17.3			25.4			19.7		
LOS by Appr:	*			C			D			C		
AllWayAvgQ:	0.0	0.0	0.0	1.0	0.0	0.2	0.1	2.3	0.0	0.0	1.6	1.4

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec): 70 Critical Vol./Cap.(X): 0.432
Loss Time (sec): 12 Average Delay (sec/veh): 14.4
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	222	0	73	58	681	0	0	462	178
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	222	0	73	58	681	0	0	462	178
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	234	0	77	61	717	0	0	486	187
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	234	0	77	61	717	0	0	486	187
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	234	0	77	61	717	0	0	486	187
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.91	0.91
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.44	0.56
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	2497	962
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.13	0.00	0.05	0.03	0.20	0.00	0.00	0.19	0.19
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.14	0.54	0.00	0.00	0.40	0.40
Volume/Cap:	0.00	0.00	0.00	0.45	0.00	0.17	0.24	0.37	0.00	0.00	0.49	0.49
Delay/Veh:	0.0	0.0	0.0	21.1	0.0	18.9	27.1	9.2	0.0	0.0	15.9	15.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	21.1	0.0	18.9	27.1	9.2	0.0	0.0	15.9	15.9
LOS by Move:	A	A	A	C	A	B	C	A	A	A	B	B
HCM2kAvgQ:	0	0	0	5	0	1	1	5	0	0	5	5

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.521
Loss Time (sec):	12	Average Delay (sec/veh):	19.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0 0	0	0	1 1 0	1	0	2 0 0
Volume Module:												
Base Vol:	210	0	179	0	0	0	0	875	112	92	839	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	210	0	179	0	0	0	0	875	112	92	839	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	221	0	188	0	0	0	0	921	118	97	883	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	221	0	188	0	0	0	0	921	118	97	883	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	221	0	188	0	0	0	0	921	118	97	883	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.77	0.23	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3146	403	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.12	0.00	0.12	0.00	0.00	0.00	0.00	0.29	0.29	0.05	0.24	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.24	0.00	0.24	0.00	0.00	0.00	0.00	0.56	0.56	0.10	0.66	0.00
Volume/Cap:	0.52	0.00	0.50	0.00	0.00	0.00	0.00	0.52	0.52	0.52	0.37	0.00
Delay/Veh:	41.2	0.0	40.8	0.0	0.0	0.0	0.0	16.5	16.5	53.6	9.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	41.2	0.0	40.8	0.0	0.0	0.0	0.0	16.5	16.5	53.6	9.0	0.0
LOS by Move:	D	A	D	A	A	A	A	B	B	D	A	A
HCM2kAvgQ:	7	0	6	0	0	0	0	12	12	3	7	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.321
Loss Time (sec):	0	Average Delay (sec/veh):	9.8
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0 1!	0 0
Volume Module:												
Base Vol:	21	203	7	9	188	35	84	4	48	1	1	1
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	21	203	7	9	188	35	84	4	48	1	1	1
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	22	214	7	9	198	37	88	4	0	1	1	1
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	22	214	7	9	198	37	88	4	0	1	1	1
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	22	214	7	9	198	37	88	4	0	1	1	1
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.05	0.95	1.00	0.95	0.05	1.00	0.34	0.33	0.33
Final Sat.:	604	665	756	32	666	810	528	25	674	194	194	194
Capacity Analysis Module:												
Vol/Sat:	0.04	0.32	0.01	0.30	0.30	0.05	0.17	0.17	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	8.7	10.4	7.4	9.8	9.8	7.2	10.0	10.0	0.0	8.7	8.7	8.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.7	10.4	7.4	9.8	9.8	7.2	10.0	10.0	0.0	8.7	8.7	8.7
LOS by Move:	A	B	A	A	A	A	A	A	*	A	A	A
ApproachDel:	10.2			9.4			10.0			8.7		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.2			9.4			10.0			8.7		
LOS by Appr:	B			A			A			A		
AllWayAvgQ:	0.0	0.4	0.0	0.4	0.4	0.0	0.2	0.2	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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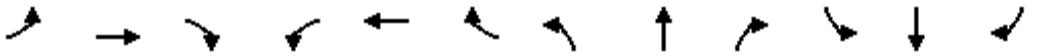

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	809	47	417	489	80	68	58	325	123	75	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5038		3433	3539	1536	1770	1863	2750	3433	1863	1556
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5038		3433	3539	1536	1770	1863	2750	3433	1863	1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	852	49	439	515	84	72	61	342	129	79	85
RTOR Reduction (vph)	0	5	0	0	0	43	0	0	32	0	0	57
Lane Group Flow (vph)	49	896	0	439	515	41	72	61	310	129	79	28
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	7.2	33.2		23.1	49.1	58.1	14.7	38.7	61.8	9.0	33.0	40.2
Effective Green, g (s)	7.2	33.2		23.1	49.1	58.1	14.7	38.7	61.8	9.0	33.0	40.2
Actuated g/C Ratio	0.06	0.28		0.19	0.41	0.48	0.12	0.32	0.51	0.08	0.28	0.34
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	106	1394		661	1448	795	217	601	1508	257	512	521
v/s Ratio Prot	0.03	c0.18		c0.13	0.15	0.00	c0.04	0.03	c0.04	c0.04	0.04	0.00
v/s Ratio Perm						0.02			0.07			0.02
v/c Ratio	0.46	0.64		0.66	0.36	0.05	0.33	0.10	0.21	0.50	0.15	0.05
Uniform Delay, d1	54.5	38.2		44.9	24.5	16.4	48.2	28.5	15.8	53.3	32.9	27.0
Progression Factor	1.00	1.00		0.81	0.53	0.20	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.2	2.3		2.3	0.6	0.1	4.1	0.3	0.1	6.8	0.6	0.0
Delay (s)	57.7	40.5		38.4	13.5	3.3	52.2	28.8	15.9	60.2	33.6	27.1
Level of Service	E	D		D	B	A	D	C	B	E	C	C
Approach Delay (s)		41.4			23.2			23.0			43.4	
Approach LOS		D			C			C			D	

Intersection Summary			
HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.643
Loss Time (sec):	12	Average Delay (sec/veh):	24.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	108	0	297	0	725	327	109	651	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	108	0	297	0	725	327	109	651	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	114	0	313	0	763	344	115	685	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	114	0	313	0	763	344	115	685	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	114	0	313	0	763	344	115	685	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.91	0.91	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.38	0.62	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2371	1069	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.19	0.00	0.32	0.32	0.06	0.19	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.30	0.00	0.30	0.00	0.50	0.50	0.10	0.60	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	0.64	0.00	0.64	0.64	0.64	0.32	0.00
Delay/Veh:	0.0	0.0	0.0	31.5	0.0	39.3	0.0	22.9	22.9	59.8	12.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	31.5	0.0	39.3	0.0	22.9	22.9	59.8	12.0	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	E	B	A
HCM2kAvgQ:	0	0	0	3	0	11	0	15	15	4	6	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.973
Loss Time (sec):	12	Average Delay (sec/veh):	112.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	271	0	518	285	971	0	0	533	106
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	271	0	518	285	971	0	0	533	106
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	285	0	545	300	1022	0	0	561	112
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	285	0	545	300	1022	0	0	561	112
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	285	0	545	300	1022	0	0	561	112
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.83	0.17
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1550	308
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.16	0.00	0.34	0.17	0.54	0.00	0.00	0.36	0.36
Crit Moves:						****		****				
Green/Cycle:	0.00	0.00	0.00	0.25	0.00	0.25	0.39	0.65	0.00	0.00	0.26	0.26
Volume/Cap:	0.00	0.00	0.00	0.64	0.00	1.38	0.42	0.82	0.00	0.00	1.38	1.38
Delay/Veh:	0.0	0.0	0.0	43.8	0.0	229.4	27.1	20.0	0.0	0.0	226	225.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	43.8	0.0	229.4	27.1	20.0	0.0	0.0	226	225.6
LOS by Move:	A	A	A	D	A	F	C	C	A	A	F	F
HCM2kAvgQ:	0	0	0	10	0	40	8	29	0	0	47	47

Note: Queue reported is the number of cars per lane.

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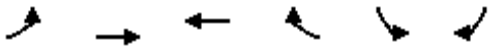

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	285	971	533	106	271	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		0.97	0.88
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3451		3433	2739
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3451		3433	2739
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	300	1022	561	112	285	545
RTOR Reduction (vph)	0	0	14	0	0	386
Lane Group Flow (vph)	300	1022	659	0	285	159
Confl. Peds. (#/hr)						5
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	25.0	77.0	48.0		35.0	35.0
Effective Green, g (s)	25.0	77.0	48.0		35.0	35.0
Actuated g/C Ratio	0.21	0.64	0.40		0.29	0.29
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	715	2271	1380		1001	799
v/s Ratio Prot	0.09	c0.29	c0.19		c0.08	
v/s Ratio Perm						0.06
v/c Ratio	0.42	0.45	0.48		0.28	0.20
Uniform Delay, d1	41.2	10.8	26.7		32.8	32.0
Progression Factor	0.68	0.23	0.30		1.00	1.00
Incremental Delay, d2	0.3	0.6	1.0		0.7	0.6
Delay (s)	28.5	3.0	9.1		33.5	32.5
Level of Service	C	A	A		C	C
Approach Delay (s)		8.8	9.1		32.9	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.716
Loss Time (sec):	12	Average Delay (sec/veh):	37.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	382	0	136	0	0	0	497	335	0	0	376	226
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	382	0	136	0	0	0	497	335	0	0	376	226
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	402	0	143	0	0	0	523	353	0	0	396	238
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	402	0	143	0	0	0	523	353	0	0	396	238
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	402	0	143	0	0	0	523	353	0	0	396	238
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.90	0.90
Lanes:	0.74	0.00	0.26	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.25	0.75
Final Sat.:	1302	0	464	0	0	0	3502	1900	0	0	2128	1279
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.31	0.00	0.00	0.00	0.15	0.19	0.00	0.00	0.19	0.19
Crit Moves:	****						****				****	
Green/Cycle:	0.43	0.00	0.43	0.00	0.00	0.00	0.21	0.47	0.00	0.00	0.26	0.26
Volume/Cap:	0.72	0.00	0.72	0.00	0.00	0.00	0.72	0.40	0.00	0.00	0.72	0.72
Delay/Veh:	31.3	0.0	31.3	0.0	0.0	0.0	47.6	21.1	0.0	0.0	43.2	43.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	31.3	0.0	31.3	0.0	0.0	0.0	47.6	21.1	0.0	0.0	43.2	43.2
LOS by Move:	C	A	C	A	A	A	D	C	A	A	D	D
HCM2kAvgQ:	17	0	17	0	0	0	9	8	0	0	12	12

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.165
Loss Time (sec):	12	Average Delay (sec/veh):	90.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	241	0	62	0	0	0	742	502	0	0	404	730
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	241	0	62	0	0	0	742	502	0	0	404	730
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	254	0	65	0	0	0	781	528	0	0	425	768
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	254	0	65	0	0	0	781	528	0	0	425	768
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	254	0	65	0	0	0	781	528	0	0	425	768
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.14	0.00	0.04	0.00	0.00	0.00	0.43	0.28	0.00	0.00	0.22	0.48
Crit Moves:	****						****					****
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.37	0.78	0.00	0.00	0.41	0.41
Volume/Cap:	1.12	0.00	0.32	0.00	0.00	0.00	1.17	0.36	0.00	0.00	0.55	1.17
Delay/Veh:	149.0	0.0	48.8	0.0	0.0	0.0	130.8	4.4	0.0	0.0	28.1	128.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	149.0	0.0	48.8	0.0	0.0	0.0	130.8	4.4	0.0	0.0	28.1	128.7
LOS by Move:	F	A	D	A	A	A	F	A	A	A	C	F
HCM2kAvgQ:	16	0	2	0	0	0	42	6	0	0	12	43

Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	497	335	0	0	376	226	382	0	136	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	1.00			1.00	1.00	0.97		1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	1863			1863	1583	3433		1554			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	1863			1863	1583	3433		1554			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	523	353	0	0	396	238	402	0	143	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	141	0	0	111	0	0	0
Lane Group Flow (vph)	523	353	0	0	396	97	402	0	32	0	0	0
Confl. Peds. (#/hr)									5			
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot					Perm	Prot		custom			
Protected Phases	5	2			6		8					
Permitted Phases						6			8			
Actuated Green, G (s)	32.0	85.0			49.0	49.0	27.0		27.0			
Effective Green, g (s)	32.0	85.0			49.0	49.0	27.0		27.0			
Actuated g/C Ratio	0.27	0.71			0.41	0.41	0.22		0.22			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	915	1320			761	646	772		350			
v/s Ratio Prot	c0.15	0.19			c0.21		c0.12					
v/s Ratio Perm						0.06			0.02			
v/c Ratio	0.57	0.27			0.52	0.15	0.52		0.09			
Uniform Delay, d1	38.1	6.3			26.7	22.4	40.8		36.8			
Progression Factor	0.76	0.66			0.40	1.59	1.00		1.00			
Incremental Delay, d2	0.8	0.5			2.4	0.5	2.5		0.5			
Delay (s)	29.8	4.6			13.2	35.9	43.3		37.3			
Level of Service	C	A			B	D	D		D			
Approach Delay (s)		19.7			21.7			41.7			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM Average Control Delay	26.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.306
Loss Time (sec):	12	Average Delay (sec/veh):	15.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	31	0	94	162	402	0	0	1029	70
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	31	0	94	162	402	0	0	1029	70
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	33	0	99	171	423	0	0	1083	74
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	33	0	99	171	423	0	0	1083	74
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	33	0	99	171	423	0	0	1083	74
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.02	0.00	0.03	0.05	0.12	0.00	0.00	0.21	0.05
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.31	0.14	0.73	0.00	0.00	0.59	0.59
Volume/Cap:	0.00	0.00	0.00	0.11	0.00	0.11	0.35	0.16	0.00	0.00	0.35	0.08
Delay/Veh:	0.0	0.0	0.0	42.6	0.0	30.1	47.2	4.9	0.0	0.0	12.5	10.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.6	0.0	30.1	47.2	4.9	0.0	0.0	12.5	10.4
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	B
HCM2kAvgQ:	0	0	0	1	0	1	3	2	0	0	7	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.793
Loss Time (sec):	16	Average Delay (sec/veh):	43.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	543	721	222	82	78	61	31	383	121	47	493	262
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	543	721	222	82	78	61	31	383	121	47	493	262
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	572	759	234	86	82	64	33	403	127	49	519	276
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	572	759	234	86	82	64	33	403	127	49	519	276
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	572	759	234	86	82	64	33	403	127	49	519	276
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.89	0.89	0.95	1.00	0.85	0.95	0.86	0.86
Lanes:	2.00	1.00	1.00	1.00	1.12	0.88	1.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	1892	1480	1805	1900	1615	1805	3278	1639
Capacity Analysis Module:												
Vol/Sat:	0.16	0.40	0.14	0.05	0.04	0.04	0.02	0.21	0.08	0.03	0.16	0.17
Crit Moves:		****		****				****		****		
Green/Cycle:	0.27	0.46	0.46	0.08	0.27	0.27	0.11	0.24	0.24	0.08	0.22	0.22
Volume/Cap:	0.61	0.87	0.32	0.57	0.16	0.16	0.17	0.87	0.32	0.33	0.73	0.77
Delay/Veh:	39.7	39.2	20.9	58.3	33.2	33.2	49.0	60.3	37.8	53.1	46.0	47.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	39.7	39.2	20.9	58.3	33.2	33.2	49.0	60.3	37.8	53.1	46.0	47.7
LOS by Move:	D	D	C	E	C	C	D	E	D	D	D	D
HCM2kAvgQ:	10	28	5	4	2	2	1	16	4	2	11	12

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.275
Loss Time (sec):	12	Average Delay (sec/veh):	13.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	3	0	427	0	0	0	0	312	12	211	325	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	0	427	0	0	0	0	312	12	211	325	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	0	449	0	0	0	0	328	13	222	342	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	0	449	0	0	0	0	328	13	222	342	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	0	449	0	0	0	0	328	13	222	342	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.94	0.94	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.93	0.07	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3455	133	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.10	0.10	0.12	0.09	0.00
Crit Moves:	****							****		****		
Green/Cycle:	1.01	0.00	1.01	0.00	0.00	0.00	0.00	0.25	0.25	0.17	0.42	0.00
Volume/Cap:	0.00	0.00	0.27	0.00	0.00	0.00	0.00	0.38	0.38	0.74	0.23	0.00
Delay/Veh:	0.0	0.0	0.1	0.0	0.0	0.0	0.0	18.9	18.9	33.0	11.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.1	0.0	0.0	0.0	0.0	18.9	18.9	33.0	11.4	0.0
LOS by Move:	A	A	A	A	A	A	A	B	B	C	B	A
HCM2kAvgQ:	0	0	0	0	0	0	0	3	3	4	2	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 10.3 Worst Case Level Of Service: C[24.6]

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Uncontrolled						Uncontrolled						Stop Sign						Stop Sign					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0	
Volume Module:																								
Base Vol:	1	47		2			178	12		24			94	6		1			1	2		254		
Growth Adj:	1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00		
Initial Bse:	1	47		2			178	12		24			94	6		1			1	2		254		
User Adj:	1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00			1.00	1.00		1.00		
PHF Adj:	0.95	0.95		0.95			0.95	0.95		0.95			0.95	0.95		0.95			0.95	0.95		0.95		
PHF Volume:	1	49		2			187	13		25			99	6		1			1	2		267		
Reduct Vol:	0	0		0			0	0		0			0	0		0			0	0		0		
FinalVolume:	1	49		2			187	13		25			99	6		1			1	2		267		
Critical Gap Module:																								
Critical Gp:	4.1	xxxx	xxxxx				4.1	xxxx	xxxxx				7.1	6.5		6.2			7.1	6.5		6.2		
FollowUpTim:	2.2	xxxx	xxxxx				2.2	xxxx	xxxxx				3.5	4.0		3.3			3.5	4.0		3.3		
Capacity Module:																								
Cnflict Vol:	38	xxxx	xxxxx				52	xxxx	xxxxx				587	454		25			456	465		51		
Potent Cap.:	1585	xxxx	xxxxx				1567	xxxx	xxxxx				424	505		1057			518	498		1023		
Move Cap.:	1585	xxxx	xxxxx				1567	xxxx	xxxxx				280	437		1057			459	431		1023		
Volume/Cap:	0.00	xxxx	xxxx				0.12	xxxx	xxxx				0.35	0.01		0.00			0.00	0.00		0.26		
Level Of Service Module:																								
2Way95thQ:	0.0	xxxx	xxxxx				0.4	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx			
Control Del:	7.3	xxxx	xxxxx				7.6	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			
LOS by Move:	A	*		*			A	*		*			*	*		*			*	*		*		
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx	288	xxxxx				xxxx	1008	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	1.6	xxxxx				xxxxx	1.1	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	24.6	xxxxx				xxxxx	9.9	xxxxx			
Shared LOS:	*	*		*			*	*		*			*	C		*			*	A		*		
ApproachDel:	xxxxxx						xxxxxx						24.6						9.9					
ApproachLOS:	*						*						C						A					

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Cycle (sec): 95 Critical Vol./Cap.(X): 0.317
Loss Time (sec): 12 Average Delay (sec/veh): 15.8
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Protected				Protected				Permitted				Permitted			
Rights:	Include				Include				Include				Ovl			
Min. Green:	10	15	15		10	15	15		15	15	15		15	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	1	0 0	1	0	1	0 0	1	0	1	0 0	1	0	1	0	1	0 1
Volume Module:																
Base Vol:	3	364	6		96	325	120		25	4	3		3	3	61	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	3	364	6		96	325	120		25	4	3		3	3	61	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	3	383	6		101	342	126		26	4	3		3	3	64	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	3	383	6		101	342	126		26	4	3		3	3	64	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	3	383	6		101	342	126		26	4	3		3	3	64	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	1.00	1.00		0.95	0.96	0.96		0.77	0.94	0.94		0.76	1.00	0.85	
Lanes:	1.00	0.98	0.02		1.00	0.73	0.27		1.00	0.57	0.43		1.00	1.00	1.00	
Final Sat.:	1805	1865	31		1805	1332	492		1457	1016	762		1450	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.00	0.21	0.21		0.06	0.26	0.26		0.02	0.00	0.00		0.00	0.00	0.04	
Crit Moves:	****					****			****							
Green/Cycle:	0.11	0.47	0.47		0.24	0.61	0.61		0.16	0.16	0.16		0.16	0.16	0.40	
Volume/Cap:	0.02	0.43	0.43		0.23	0.42	0.42		0.11	0.03	0.03		0.01	0.01	0.10	
Delay/Veh:	38.1	16.9	16.9		29.1	10.0	10.0		34.5	33.9	33.9		33.8	33.8	17.8	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	38.1	16.9	16.9		29.1	10.0	10.0		34.5	33.9	33.9		33.8	33.8	17.8	
LOS by Move:	D	B	B		C	A	A		C	C	C		C	C	B	
HCM2kAvgQ:	0	7	7		2	7	7		1	0	0		0	0	1	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #16 St. "A" (NS) / St. "B" (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.291
Loss Time (sec):	8	Average Delay (sec/veh):	10.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	8	155	1	95	39	190	148	8	1	1	6	61
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	155	1	95	39	190	148	8	1	1	6	61
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	8	163	1	100	41	200	156	8	1	1	6	64
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	163	1	100	41	200	156	8	1	1	6	64
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	163	1	100	41	200	156	8	1	1	6	64
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.59	1.00	1.00	0.65	0.88	0.88	0.76	0.98	0.98	0.76	1.00	0.85
Lanes:	1.00	0.99	0.01	1.00	0.17	0.83	1.00	0.89	0.11	1.00	1.00	1.00
Final Sat.:	1119	1886	12	1229	283	1381	1452	1660	208	1446	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.09	0.09	0.08	0.14	0.14	0.11	0.01	0.01	0.00	0.00	0.04
Crit Moves:					****		****					
Green/Cycle:	0.50	0.50	0.50	0.50	0.50	0.50	0.37	0.37	0.37	0.37	0.37	0.37
Volume/Cap:	0.02	0.17	0.17	0.16	0.29	0.29	0.29	0.01	0.01	0.00	0.01	0.11
Delay/Veh:	7.6	8.4	8.4	8.4	9.0	9.0	13.7	12.0	12.0	12.0	12.0	12.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.6	8.4	8.4	8.4	9.0	9.0	13.7	12.0	12.0	12.0	12.0	12.5
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	0	2	2	1	3	3	2	0	0	0	0	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.629
Loss Time (sec):	0	Average Delay (sec/veh):	16.3
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	129	105	171	29	117	1	3	76	204	271	104	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	129	105	171	29	117	1	3	76	204	271	104	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	136	111	180	31	123	1	3	80	215	285	109	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	136	111	180	31	123	1	3	80	215	285	109	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	136	111	180	31	123	1	3	80	215	285	109	20
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.38	0.62	1.00	0.99	0.01	1.00	0.27	0.73	1.00	1.00	1.00
Final Sat.:	464	202	329	421	445	4	454	143	385	453	479	525
Capacity Analysis Module:												
Vol/Sat:	0.29	0.55	0.55	0.07	0.28	0.28	0.01	0.56	0.56	0.63	0.23	0.04
Crit Moves:			****		****				****	****		
Delay/Veh:	13.1	16.3	16.3	11.2	12.7	12.7	10.3	16.5	16.5	21.9	12.0	9.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	13.1	16.3	16.3	11.2	12.7	12.7	10.3	16.5	16.5	21.9	12.0	9.5
LOS by Move:	B	C	C	B	B	B	B	C	C	C	B	A
ApproachDel:	15.3			12.4			16.4			18.7		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	15.3			12.4			16.4			18.7		
LOS by Appr:	C			B			C			C		
AllWayAvgQ:	0.4	1.0	1.0	0.1	0.3	0.3	0.0	1.1	1.1	1.4	0.3	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.511
Loss Time (sec):	8	Average Delay (sec/veh):	11.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	129	105	171	29	117	1	3	76	204	271	104	19
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	129	105	171	29	117	1	3	76	204	271	104	19
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	136	111	180	31	123	1	3	80	215	285	109	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	136	111	180	31	123	1	3	80	215	285	109	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	136	111	180	31	123	1	3	80	215	285	109	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.67	0.91	0.91	0.47	1.00	1.00	0.68	0.89	0.89	0.55	1.00	0.85
Lanes:	1.00	0.38	0.62	1.00	0.99	0.01	1.00	0.27	0.73	1.00	1.00	1.00
Final Sat.:	1279	656	1068	887	1882	16	1298	460	1233	1041	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.11	0.17	0.17	0.03	0.07	0.07	0.00	0.17	0.17	0.27	0.06	0.01
Crit Moves:		****								****		
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.32	0.51	0.51	0.10	0.20	0.20	0.00	0.32	0.32	0.51	0.11	0.02
Delay/Veh:	15.5	17.0	17.0	14.1	14.6	14.6	6.5	8.0	8.0	9.7	6.9	6.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.5	17.0	17.0	14.1	14.6	14.6	6.5	8.0	8.0	9.7	6.9	6.5
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	2	5	5	0	2	2	0	3	3	4	1	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.681
Loss Time (sec):	0	Average Delay (sec/veh):	15.6
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	32	360	32	15	408	31	14	6	32	10	12	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	32	360	32	15	408	31	14	6	32	10	12	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	34	379	34	16	429	33	15	6	34	11	13	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	34	379	34	16	429	33	15	6	34	11	13	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	34	379	34	16	429	33	15	6	34	11	13	51
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.92	0.08	1.00	0.93	0.07	0.27	0.11	0.62	0.14	0.17	0.69
Final Sat.:	606	620	55	608	631	48	144	62	328	78	94	376
Capacity Analysis Module:												
Vol/Sat:	0.06	0.61	0.61	0.03	0.68	0.68	0.10	0.10	0.10	0.13	0.13	0.13
Crit Moves:		****			****			****			****	
Delay/Veh:	8.8	15.6	15.6	8.6	18.0	18.0	9.4	9.4	9.4	9.5	9.5	9.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.8	15.6	15.6	8.6	18.0	18.0	9.4	9.4	9.4	9.5	9.5	9.5
LOS by Move:	A	C	C	A	C	C	A	A	A	A	A	A
ApproachDel:	15.1			17.7			9.4			9.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	15.1			17.7			9.4			9.5		
LOS by Appr:	C			C			A			A		
AllWayAvgQ:	0.1	1.4	1.4	0.0	1.9	1.9	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.217
Loss Time (sec):	0	Average Delay (sec/veh):	84.3
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0 0	0	1 0	0 0	1	1 0	2 0	0	0 0	1 1	0
Volume Module:												
Base Vol:	0	0	0	372	0	76	94	539	0	0	709	403
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	372	0	76	94	539	0	0	709	403
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	392	0	80	99	567	0	0	746	424
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	392	0	80	99	567	0	0	746	424
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	392	0	80	99	567	0	0	746	424
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.28	0.72
Final Sat.:	0	0	0	415	0	475	393	836	0	0	613	368
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.94	xxxx	0.17	0.25	0.68	xxxx	xxxx	1.22	1.15
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	60.1	0.0	11.7	14.8	27.3	0.0	0.0	140	114.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	60.1	0.0	11.7	14.8	27.3	0.0	0.0	140	114.2
LOS by Move:	*	*	*	F	*	B	B	D	*	*	F	F
ApproachDel:	xxxxxx			51.9			25.5			130.8		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			51.9			25.5			130.8		
LOS by Appr:	*			F			D			F		
AllWayAvgQ:	0.0	0.0	0.0	5.6	0.0	0.2	0.3	1.9	0.0	0.0	18.0	14.7

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	75	Critical Vol./Cap.(X):	0.732
Loss Time (sec):	12	Average Delay (sec/veh):	20.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	372	0	76	94	539	0	0	709	403
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	372	0	76	94	539	0	0	709	403
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	392	0	80	99	567	0	0	746	424
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	392	0	80	99	567	0	0	746	424
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	392	0	80	99	567	0	0	746	424
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.90	0.90
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.28	0.72
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	2177	1238
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.22	0.00	0.05	0.05	0.16	0.00	0.00	0.34	0.34
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.27	0.00	0.27	0.13	0.57	0.00	0.00	0.43	0.43
Volume/Cap:	0.00	0.00	0.00	0.79	0.00	0.18	0.41	0.28	0.00	0.00	0.79	0.79
Delay/Veh:	0.0	0.0	0.0	33.7	0.0	21.0	30.9	8.5	0.0	0.0	21.4	21.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	33.7	0.0	21.0	30.9	8.5	0.0	0.0	21.4	21.4
LOS by Move:	A	A	A	C	A	C	C	A	A	A	C	C
HCM2kAvgQ:	0	0	0	11	0	1	2	3	0	0	11	11

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.754
Loss Time (sec): 12 Average Delay (sec/veh): 25.9
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	196	0	162	0	0	0	0	1169	274	225	538	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	196	0	162	0	0	0	0	1169	274	225	538	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	206	0	171	0	0	0	0	1231	288	237	566	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	206	0	171	0	0	0	0	1231	288	237	566	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	206	0	171	0	0	0	0	1231	288	237	566	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.92	0.92	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.62	0.38	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	2843	666	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.11	0.00	0.11	0.00	0.00	0.00	0.00	0.43	0.43	0.13	0.16	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.15	0.00	0.15	0.00	0.00	0.00	0.00	0.57	0.57	0.17	0.75	0.00
Volume/Cap:	0.75	0.00	0.70	0.00	0.00	0.00	0.00	0.75	0.75	0.75	0.21	0.00
Delay/Veh:	60.0	0.0	56.8	0.0	0.0	0.0	0.0	20.8	20.8	57.0	4.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	60.0	0.0	56.8	0.0	0.0	0.0	0.0	20.8	20.8	57.0	4.5	0.0
LOS by Move:	E	A	E	A	A	A	A	C	C	E	A	A
HCM2kAvgQ:	9	0	7	0	0	0	0	23	23	9	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.568
Loss Time (sec):	0	Average Delay (sec/veh):	12.3
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0 1!	0 0
Volume Module:												
Base Vol:	49	265	8	7	375	95	47	1	34	1	1	3
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	265	8	7	375	95	47	1	34	1	1	3
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	52	279	8	7	395	100	49	1	0	1	1	3
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	279	8	7	395	100	49	1	0	1	1	3
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	52	279	8	7	395	100	49	1	0	1	1	3
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.02	0.98	1.00	0.98	0.02	1.00	0.20	0.20	0.60
Final Sat.:	568	625	699	13	695	817	475	10	577	106	106	319
Capacity Analysis Module:												
Vol/Sat:	0.09	0.45	0.01	0.57	0.57	0.12	0.10	0.10	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	9.5	12.7	7.7	14.0	14.0	7.6	10.3	10.3	0.0	9.2	9.2	9.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.5	12.7	7.7	14.0	14.0	7.6	10.3	10.3	0.0	9.2	9.2	9.2
LOS by Move:	A	B	A	B	B	A	B	B	*	A	A	A
ApproachDel:	12.1			12.7			10.3			9.2		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	12.1			12.7			10.3			9.2		
LOS by Appr:	B			B			B			A		
AllWayAvgQ:	0.1	0.8	0.0	1.2	1.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	732	116	789	897	67	104	142	852	381	129	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4967		3433	3539	1540	1770	1863	2755	3433	1863	1556
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4967		3433	3539	1540	1770	1863	2755	3433	1863	1556
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	65	771	122	831	944	71	109	149	897	401	136	131
RTOR Reduction (vph)	0	18	0	0	0	34	0	0	9	0	0	49
Lane Group Flow (vph)	65	875	0	831	944	37	109	149	888	401	136	82
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	8.8	28.0		29.0	48.2	62.5	10.8	32.7	61.7	14.3	36.2	45.0
Effective Green, g (s)	8.8	28.0		29.0	48.2	62.5	10.8	32.7	61.7	14.3	36.2	45.0
Actuated g/C Ratio	0.07	0.23		0.24	0.40	0.52	0.09	0.27	0.51	0.12	0.30	0.38
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	130	1159		830	1421	853	159	508	1417	409	562	584
v/s Ratio Prot	0.04	c0.18		c0.24	0.27	0.01	0.06	0.08	c0.15	c0.12	0.07	0.01
v/s Ratio Perm						0.02			0.17			0.04
v/c Ratio	0.50	0.76		1.00	0.66	0.04	0.69	0.29	0.63	0.98	0.24	0.14
Uniform Delay, d1	53.5	42.8		45.5	29.3	14.1	53.0	34.5	20.9	52.7	31.6	24.7
Progression Factor	1.00	1.00		0.70	0.61	0.40	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	4.6		24.2	1.4	0.1	21.4	1.5	0.9	39.9	1.0	0.1
Delay (s)	56.5	47.4		56.2	19.4	5.6	74.4	36.0	21.8	92.6	32.6	24.9
Level of Service	E	D		E	B	A	E	D	C	F	C	C
Approach Delay (s)		48.0			35.4			28.6			67.1	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM Average Control Delay	40.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.770
Loss Time (sec):	12	Average Delay (sec/veh):	27.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	108	0	364	0	644	680	45	403	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	108	0	364	0	644	680	45	403	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	114	0	383	0	678	716	47	424	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	114	0	383	0	678	716	47	424	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	114	0	383	0	678	716	47	424	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.88	0.88	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1666	1666	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.06	0.00	0.24	0.00	0.41	0.43	0.03	0.12	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.53	0.53	0.08	0.61	0.00
Volume/Cap:	0.00	0.00	0.00	0.22	0.00	0.82	0.00	0.77	0.82	0.32	0.19	0.00
Delay/Veh:	0.0	0.0	0.0	32.4	0.0	50.3	0.0	24.9	26.8	53.0	10.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.4	0.0	50.3	0.0	24.9	26.8	53.0	10.4	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	D	B	A
HCM2kAvgQ:	0	0	0	3	0	15	0	20	23	2	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.741
Loss Time (sec):	12	Average Delay (sec/veh):	291.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	0	1 0
Volume Module:												
Base Vol:	0	0	0	482	0	919	571	1393	0	0	948	174
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	482	0	919	571	1393	0	0	948	174
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	507	0	967	601	1466	0	0	998	183
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	507	0	967	601	1466	0	0	998	183
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	507	0	967	601	1466	0	0	998	183
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	0.98	0.98
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.84	0.16
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1572	288
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.28	0.00	0.60	0.33	0.77	0.00	0.00	0.63	0.63
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.34	0.00	0.34	0.19	0.56	0.00	0.00	0.36	0.36
Volume/Cap:	0.00	0.00	0.00	0.82	0.00	1.74	1.74	1.39	0.00	0.00	1.74	1.74
Delay/Veh:	0.0	0.0	0.0	44.2	0.0	380.4	393.7	207	0.0	0.0	378	377.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	44.2	0.0	380.4	393.7	207	0.0	0.0	378	377.7
LOS by Move:	A	A	A	D	A	F	F	F	A	A	F	F
HCM2kAvgQ:	0	0	0	19	0	86	53	103	0	0	102	102

Note: Queue reported is the number of cars per lane.

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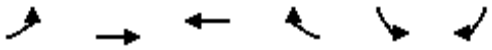

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	571	1393	948	174	482	919
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.95	0.95		0.97	0.88
Frpb, ped/bikes	1.00	1.00	1.00		1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	3433	3539	3457		3433	2737
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	3433	3539	3457		3433	2737
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	601	1466	998	183	507	967
RTOR Reduction (vph)	0	0	13	0	0	521
Lane Group Flow (vph)	601	1466	1168	0	507	446
Confl. Peds. (#/hr)						5
Turn Type	Prot					Perm
Protected Phases	5	2	6		4	
Permitted Phases						4
Actuated Green, G (s)	26.0	81.0	51.0		31.0	31.0
Effective Green, g (s)	26.0	81.0	51.0		31.0	31.0
Actuated g/C Ratio	0.22	0.68	0.42		0.26	0.26
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	744	2389	1469		887	707
v/s Ratio Prot	c0.18	0.41	c0.34		0.15	
v/s Ratio Perm						c0.16
v/c Ratio	0.81	0.61	0.80		0.57	0.63
Uniform Delay, d1	44.6	10.8	30.0		38.7	39.4
Progression Factor	0.91	0.73	0.54		1.00	1.00
Incremental Delay, d2	4.3	0.8	2.5		2.7	4.2
Delay (s)	44.8	8.6	18.6		41.4	43.7
Level of Service	D	A	B		D	D
Approach Delay (s)		19.1	18.6		42.9	
Approach LOS		B	B		D	

Intersection Summary			
HCM Average Control Delay	26.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.457
Loss Time (sec):	12	Average Delay (sec/veh):	26.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	256	0	35	0	0	0	323	434	0	0	189	47
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	256	0	35	0	0	0	323	434	0	0	189	47
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	269	0	37	0	0	0	340	457	0	0	199	49
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	269	0	37	0	0	0	340	457	0	0	199	49
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	269	0	37	0	0	0	340	457	0	0	199	49
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.94	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.92	0.92
Lanes:	0.88	0.00	0.12	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.60	0.40
Final Sat.:	1576	0	215	0	0	0	3502	1900	0	0	2804	697
Capacity Analysis Module:												
Vol/Sat:	0.17	0.00	0.17	0.00	0.00	0.00	0.10	0.24	0.00	0.00	0.07	0.07
Crit Moves:	****							****				
Green/Cycle:	0.32	0.00	0.32	0.00	0.00	0.00	0.45	0.58	0.00	0.00	0.13	0.13
Volume/Cap:	0.54	0.00	0.54	0.00	0.00	0.00	0.22	0.41	0.00	0.00	0.54	0.54
Delay/Veh:	34.6	0.0	34.6	0.0	0.0	0.0	20.3	14.1	0.0	0.0	49.8	49.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	34.6	0.0	34.6	0.0	0.0	0.0	20.3	14.1	0.0	0.0	49.8	49.8
LOS by Move:	C	A	C	A	A	A	C	B	A	A	D	D
HCM2kAvgQ:	10	0	10	0	0	0	4	9	0	0	5	5

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 1.225
Loss Time (sec): 12 Average Delay (sec/veh): 99.3
Optimal Cycle: OPTIMIZED Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0 0	0	0 0	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	458	0	217	0	0	0	805	1074	0	0	661	401
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	458	0	217	0	0	0	805	1074	0	0	661	401
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	482	0	228	0	0	0	847	1131	0	0	696	422
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	482	0	228	0	0	0	847	1131	0	0	696	422
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	482	0	228	0	0	0	847	1131	0	0	696	422
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.27	0.00	0.14	0.00	0.00	0.00	0.47	0.60	0.00	0.00	0.37	0.26
Crit Moves:	****						****				****	
Green/Cycle:	0.22	0.00	0.22	0.00	0.00	0.00	0.38	0.68	0.00	0.00	0.30	0.30
Volume/Cap:	1.22	0.00	0.65	0.00	0.00	0.00	1.22	0.87	0.00	0.00	1.22	0.87
Delay/Veh:	168.8	0.0	47.0	0.0	0.0	0.0	150.8	21.7	0.0	0.0	158	56.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	168.8	0.0	47.0	0.0	0.0	0.0	150.8	21.7	0.0	0.0	158	56.0
LOS by Move:	F	A	D	A	A	A	F	C	A	A	F	E
HCM2kAvgQ:	31	0	9	0	0	0	48	30	0	0	41	16

Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	805	1074	0	0	661	401	458	0	217	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	0.97	1.00			1.00	1.00	0.97		1.00			
Frpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		0.98			
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	3433	1863			1863	1583	3433		1551			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	3433	1863			1863	1583	3433		1551			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	847	1131	0	0	696	422	482	0	228	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	232	0	0	126	0	0	0
Lane Group Flow (vph)	847	1131	0	0	696	190	482	0	102	0	0	0
Confl. Peds. (#/hr)									5			
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot					Perm	Prot		custom			
Protected Phases	5	2			6		8					
Permitted Phases						6			8			
Actuated Green, G (s)	33.0	91.0			54.0	54.0	21.0		21.0			
Effective Green, g (s)	33.0	91.0			54.0	54.0	21.0		21.0			
Actuated g/C Ratio	0.28	0.76			0.45	0.45	0.18		0.18			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)	944	1413			838	712	601		271			
v/s Ratio Prot	c0.25	0.61			c0.37		c0.14					
v/s Ratio Perm						0.12			0.07			
v/c Ratio	0.90	0.80			0.83	0.27	0.80		0.38			
Uniform Delay, d1	41.9	8.9			29.0	20.6	47.5		43.7			
Progression Factor	0.88	0.62			0.67	1.17	1.00		1.00			
Incremental Delay, d2	9.2	3.9			9.0	0.9	10.8		3.9			
Delay (s)	45.8	9.4			28.5	25.0	58.3		47.6			
Level of Service	D	A			C	C	E		D			
Approach Delay (s)		25.0			27.2			54.9			0.0	
Approach LOS		C			C			D			A	

Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.531
Loss Time (sec):	12	Average Delay (sec/veh):	25.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	172	0	504	594	682	0	0	555	121
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	172	0	504	594	682	0	0	555	121
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	181	0	531	625	718	0	0	584	127
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	181	0	531	625	718	0	0	584	127
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	181	0	531	625	718	0	0	584	127
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.10	0.00	0.19	0.18	0.20	0.00	0.00	0.11	0.08
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.35	0.00	0.69	0.34	0.55	0.00	0.00	0.21	0.21
Volume/Cap:	0.00	0.00	0.00	0.29	0.00	0.27	0.53	0.36	0.00	0.00	0.53	0.37
Delay/Veh:	0.0	0.0	0.0	28.3	0.0	7.3	32.6	15.4	0.0	0.0	42.5	41.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	28.3	0.0	7.3	32.6	15.4	0.0	0.0	42.5	41.1
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	5	0	4	9	7	0	0	7	4

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.794
Loss Time (sec):	16	Average Delay (sec/veh):	43.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	227	269	44	338	416	77	59	499	320	112	340	125
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	227	269	44	338	416	77	59	499	320	112	340	125
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	239	283	46	356	438	81	62	525	337	118	358	132
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	239	283	46	356	438	81	62	525	337	118	358	132
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	239	283	46	356	438	81	62	525	337	118	358	132
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.93	0.93	0.95	1.00	0.85	0.95	0.87	0.87
Lanes:	2.00	1.00	1.00	1.00	1.69	0.31	1.00	1.00	1.00	1.00	2.19	0.81
Final Sat.:	3502	1900	1615	1805	2976	551	1805	1900	1615	1805	3641	1339
Capacity Analysis Module:												
Vol/Sat:	0.07	0.15	0.03	0.20	0.15	0.15	0.03	0.28	0.21	0.07	0.10	0.10
Crit Moves:		****		****				****		****		
Green/Cycle:	0.15	0.19	0.19	0.25	0.29	0.29	0.14	0.35	0.35	0.08	0.29	0.29
Volume/Cap:	0.47	0.79	0.15	0.79	0.51	0.51	0.24	0.79	0.60	0.78	0.34	0.34
Delay/Veh:	47.7	58.2	41.0	51.8	35.8	35.8	46.0	41.9	34.0	77.0	33.9	33.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.7	58.2	41.0	51.8	35.8	35.8	46.0	41.9	34.0	77.0	33.9	33.9
LOS by Move:	D	E	D	D	D	D	D	D	C	E	C	C
HCM2kAvgQ:	5	12	1	14	9	9	2	18	10	6	5	5

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	105	Critical Vol./Cap.(X):	0.592
Loss Time (sec):	12	Average Delay (sec/veh):	27.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	12	0	294	0	0	0	0	339	4	398	387	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	0	294	0	0	0	0	339	4	398	387	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	13	0	309	0	0	0	0	357	4	419	407	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	0	309	0	0	0	0	357	4	419	407	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	13	0	309	0	0	0	0	357	4	419	407	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.98	0.02	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3561	42	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.01	0.00	0.19	0.00	0.00	0.00	0.00	0.10	0.10	0.23	0.11	0.00
Crit Moves:			****					****		****		
Green/Cycle:	0.32	0.00	0.32	0.00	0.00	0.00	0.00	0.17	0.17	0.39	0.56	0.00
Volume/Cap:	0.02	0.00	0.59	0.00	0.00	0.00	0.00	0.59	0.59	0.59	0.20	0.00
Delay/Veh:	24.2	0.0	31.5	0.0	0.0	0.0	0.0	41.8	41.8	26.6	11.4	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.2	0.0	31.5	0.0	0.0	0.0	0.0	41.8	41.8	26.6	11.4	0.0
LOS by Move:	C	A	C	A	A	A	A	D	D	C	B	A
HCM2kAvgQ:	0	0	9	0	0	0	0	6	6	10	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 9.3 Worst Case Level Of Service: D[27.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	24	5	245	45	84	44	18	1	9	28	223
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	24	5	245	45	84	44	18	1	9	28	223
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	25	5	258	47	88	46	19	1	9	29	235
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	25	5	258	47	88	46	19	1	9	29	235
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	31	xxxx	xxxxx	767	638	92	645	679	28
Potent Cap.:	xxxx	xxxx	xxxxx	1595	xxxx	xxxxx	321	397	971	388	376	1053
Move Cap.:	xxxx	xxxx	xxxxx	1595	xxxx	xxxxx	198	322	971	317	305	1053
Volume/Cap:	xxxx	xxxx	xxxx	0.16	xxxx	xxxx	0.23	0.06	0.00	0.03	0.10	0.22
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	226	xxxxx	xxxx	783	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.2	xxxxx	xxxxx	1.6	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	27.4	xxxxx	xxxxx	12.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			27.4			12.0		
ApproachLOS:	*			*			D			B		

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.756
Loss Time (sec):	12	Average Delay (sec/veh):	26.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	15	15	10	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	11	633	24	350	644	40	115	19	10	31	18	352
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	11	633	24	350	644	40	115	19	10	31	18	352
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	12	666	25	368	678	42	121	20	11	33	19	371
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	12	666	25	368	678	42	121	20	11	33	19	371
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	12	666	25	368	678	42	121	20	11	33	19	371
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.99	0.99	0.75	0.95	0.95	0.74	1.00	0.85
Lanes:	1.00	0.96	0.04	1.00	0.94	0.06	1.00	0.66	0.34	1.00	1.00	1.00
Final Sat.:	1805	1820	69	1805	1773	110	1431	1180	621	1412	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.37	0.37	0.20	0.38	0.38	0.08	0.02	0.02	0.02	0.01	0.23
Crit Moves:		****			****			****				
Green/Cycle:	0.16	0.45	0.45	0.25	0.54	0.54	0.17	0.17	0.17	0.17	0.17	0.42
Volume/Cap:	0.04	0.81	0.81	0.81	0.70	0.70	0.51	0.10	0.10	0.14	0.06	0.55
Delay/Veh:	32.2	27.6	27.6	42.6	17.5	17.5	35.9	31.9	31.9	32.3	31.6	20.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.2	27.6	27.6	42.6	17.5	17.5	35.9	31.9	31.9	32.3	31.6	20.8
LOS by Move:	C	C	C	D	B	B	D	C	C	C	C	C
HCM2kAvgQ:	0	17	17	9	13	13	4	1	1	1	0	8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2019 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #16 St. "A" (NS) / St. "B" (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.583
Loss Time (sec):	8	Average Delay (sec/veh):	12.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	10	73	6	350	138	156	208	37	19	11	54	352
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	73	6	350	138	156	208	37	19	11	54	352
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	11	77	6	368	145	164	219	39	20	12	57	371
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	11	77	6	368	145	164	219	39	20	12	57	371
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	11	77	6	368	145	164	219	39	20	12	57	371
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.52	0.99	0.99	0.70	0.92	0.92	0.72	0.95	0.95	0.72	1.00	0.85
Lanes:	1.00	0.92	0.08	1.00	0.47	0.53	1.00	0.66	0.34	1.00	1.00	1.00
Final Sat.:	980	1736	143	1334	820	928	1372	1191	612	1368	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.04	0.04	0.28	0.18	0.18	0.16	0.03	0.03	0.01	0.03	0.23
Crit Moves:				****								****
Green/Cycle:	0.47	0.47	0.47	0.47	0.47	0.47	0.39	0.39	0.39	0.39	0.39	0.39
Volume/Cap:	0.02	0.09	0.09	0.58	0.37	0.37	0.41	0.08	0.08	0.02	0.08	0.58
Delay/Veh:	8.4	8.7	8.7	12.9	10.4	10.4	13.6	11.5	11.5	11.2	11.4	15.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	8.7	8.7	12.9	10.4	10.4	13.6	11.5	11.5	11.2	11.4	15.7
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	0	1	1	5	3	3	3	1	1	0	1	6

Note: Queue reported is the number of cars per lane.

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APPENDIX 5.6

2035 Without Project Conditions
Intersection Operations Analysis Worksheets

Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.053
Loss Time (sec):	0	Average Delay (sec/veh):	37.7
Optimal Cycle:	0	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	116	244	244	191	148	6	6	190	89	117	104	165
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	116	244	244	191	148	6	6	190	89	117	104	165
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	122	257	257	201	156	6	6	200	94	123	109	174
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	257	257	201	156	6	6	200	94	123	109	174
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	122	257	257	201	156	6	6	200	94	123	109	174
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.50	0.50	1.00	0.96	0.04	1.00	0.68	0.32	1.00	1.00	1.00
Final Sat.:	429	244	244	406	414	17	396	296	139	376	396	430
Capacity Analysis Module:												
Vol/Sat:	0.28	1.05	1.05	0.49	0.38	0.38	0.02	0.68	0.68	0.33	0.28	0.40
Crit Moves:		****		****					****			****
Delay/Veh:	14.1	82.2	82.2	19.3	15.5	15.5	11.7	25.6	25.6	16.4	14.8	16.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.1	82.2	82.2	19.3	15.5	15.5	11.7	25.6	25.6	16.4	14.8	16.1
LOS by Move:	B	F	F	C	C	C	B	D	D	C	B	C
ApproachDel:		69.1			17.6			25.3			15.8	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		69.1			17.6			25.3			15.8	
LOS by Appr:		F			C			D			C	
AllWayAvgQ:	0.4	9.8	9.8	0.9	0.6	0.6	0.0	1.8	1.8	0.5	0.4	0.6

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.525
Loss Time (sec):	8	Average Delay (sec/veh):	12.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	116	244	244	191	148	6	6	190	89	117	104	165
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	116	244	244	191	148	6	6	190	89	117	104	165
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	122	257	257	201	156	6	6	200	94	123	109	174
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	122	257	257	201	156	6	6	200	94	123	109	174
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	122	257	257	201	156	6	6	200	94	123	109	174
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.65	0.93	0.93	0.38	0.99	0.99	0.68	0.95	0.95	0.45	1.00	0.85
Lanes:	1.00	0.50	0.50	1.00	0.96	0.04	1.00	0.68	0.32	1.00	1.00	1.00
Final Sat.:	1231	879	879	716	1815	74	1298	1232	577	851	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.10	0.29	0.29	0.28	0.09	0.09	0.00	0.16	0.16	0.14	0.06	0.11
Crit Moves:		****						****				
Green/Cycle:	0.56	0.56	0.56	0.56	0.56	0.56	0.31	0.31	0.31	0.31	0.31	0.31
Volume/Cap:	0.18	0.52	0.52	0.50	0.15	0.15	0.02	0.52	0.52	0.47	0.19	0.35
Delay/Veh:	6.7	8.8	8.8	9.2	6.5	6.5	14.4	18.0	18.0	18.0	15.3	16.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	6.7	8.8	8.8	9.2	6.5	6.5	14.4	18.0	18.0	18.0	15.3	16.4
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	1	6	6	3	1	1	0	5	5	2	2	3

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bonnett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.232
Loss Time (sec):	0	Average Delay (sec/veh):	8.7
Optimal Cycle:	0	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	7	122	13	28	146	12	44	9	32	17	3	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	122	13	28	146	12	44	9	32	17	3	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	7	128	14	29	154	13	46	9	34	18	3	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	128	14	29	154	13	46	9	34	18	3	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	128	14	29	154	13	46	9	34	18	3	34
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.90	0.10	1.00	0.92	0.08	0.52	0.10	0.38	0.33	0.06	0.61
Final Sat.:	638	641	68	644	661	54	375	77	273	242	43	456
Capacity Analysis Module:												
Vol/Sat:	0.01	0.20	0.20	0.05	0.23	0.23	0.12	0.12	0.12	0.07	0.07	0.07
Crit Moves:			****		****		****			****		
Delay/Veh:	8.3	8.8	8.8	8.4	9.0	9.0	8.3	8.3	8.3	7.9	7.9	7.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.3	8.8	8.8	8.4	9.0	9.0	8.3	8.3	8.3	7.9	7.9	7.9
LOS by Move:	A	A	A	A	A	A	A	A	A	A	A	A
ApproachDel:	8.8			8.9			8.3			7.9		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	8.8			8.9			8.3			7.9		
LOS by Appr:	A			A			A			A		
AllWayAvgQ:	0.0	0.2	0.2	0.0	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.625
Loss Time (sec):	0	Average Delay (sec/veh):	15.3
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	290	0	19	8	322	0	0	427	118
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	290	0	19	8	322	0	0	427	118
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	305	0	20	8	339	0	0	449	124
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	305	0	20	8	339	0	0	449	124
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	305	0	20	8	339	0	0	449	124
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.57	0.43
Final Sat.:	0	0	0	489	0	574	463	1001	0	0	906	258
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.62	xxxx	0.03	0.02	0.34	xxxx	xxxx	0.50	0.48
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	20.3	0.0	8.9	10.3	13.0	0.0	0.0	14.4	13.7
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	20.3	0.0	8.9	10.3	13.0	0.0	0.0	14.4	13.7
LOS by Move:	*	*	*	C	*	A	B	B	*	*	B	B
ApproachDel:	xxxxxx			19.6			13.0			14.3		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			19.6			13.0			14.3		
LOS by Appr:	*			C			B			B		
AllWayAvgQ:	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.5	0.0	0.0	0.9	0.8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.833
Loss Time (sec):	12	Average Delay (sec/veh):	29.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0	0	0	1 1	1	0 2	0 0
Volume Module:												
Base Vol:	194	0	286	0	0	0	0	1181	151	289	1179	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	194	0	286	0	0	0	0	1181	151	289	1179	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	204	0	301	0	0	0	0	1243	159	304	1241	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	204	0	301	0	0	0	0	1243	159	304	1241	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	204	0	301	0	0	0	0	1243	159	304	1241	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.77	0.23	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3146	402	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.11	0.00	0.19	0.00	0.00	0.00	0.00	0.40	0.40	0.17	0.34	0.00
Crit Moves:			****					****		****		
Green/Cycle:	0.22	0.00	0.22	0.00	0.00	0.00	0.00	0.47	0.47	0.20	0.68	0.00
Volume/Cap:	0.51	0.00	0.83	0.00	0.00	0.00	0.00	0.83	0.83	0.83	0.51	0.00
Delay/Veh:	41.8	0.0	59.6	0.0	0.0	0.0	0.0	31.2	31.2	61.0	9.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	41.8	0.0	59.6	0.0	0.0	0.0	0.0	31.2	31.2	61.0	9.8	0.0
LOS by Move:	D	A	E	A	A	A	A	C	C	E	A	A
HCM2kAvgQ:	7	0	13	0	0	0	0	25	25	11	12	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.765
Loss Time (sec):	0	Average Delay (sec/veh):	17.3
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0	1! 0 0
Volume Module:												
Base Vol:	18	158	10	35	473	53	89	5	41	2	2	2
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	18	158	10	35	473	53	89	5	41	2	2	2
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	19	166	11	37	498	56	94	5	0	2	2	2
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	19	166	11	37	498	56	94	5	0	2	2	2
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	19	166	11	37	498	56	94	5	0	2	2	2
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.07	0.93	1.00	0.95	0.05	1.00	0.34	0.33	0.33
Final Sat.:	529	576	641	48	651	808	465	26	584	170	170	170
Capacity Analysis Module:												
Vol/Sat:	0.04	0.29	0.02	0.76	0.76	0.07	0.20	0.20	0.00	0.01	0.01	0.01
Crit Moves:		****			****			****			****	
Delay/Veh:	9.5	11.1	8.2	22.0	22.0	7.4	11.1	11.1	0.0	9.5	9.5	9.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.5	11.1	8.2	22.0	22.0	7.4	11.1	11.1	0.0	9.5	9.5	9.5
LOS by Move:	A	B	A	C	C	A	B	B	*	A	A	A
ApproachDel:	10.8			20.6			11.1			9.5		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.8			20.6			11.1			9.5		
LOS by Appr:	B			C			B			A		
AllWayAvgQ:	0.0	0.4	0.0	2.8	2.8	0.1	0.2	0.2	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.290
Loss Time (sec): 12 Average Delay (sec/veh): 19.8
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	2	0 1
Volume Module:												
Base Vol:	0	0	0	142	0	143	104	508	0	0	403	113
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	142	0	143	104	508	0	0	403	113
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	149	0	151	109	535	0	0	424	119
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	149	0	151	109	535	0	0	424	119
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	149	0	151	109	535	0	0	424	119
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.95	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.09	0.06	0.15	0.00	0.00	0.12	0.07
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.51	0.20	0.59	0.00	0.00	0.39	0.70
Volume/Cap:	0.00	0.00	0.00	0.27	0.00	0.18	0.30	0.25	0.00	0.00	0.30	0.11
Delay/Veh:	0.0	0.0	0.0	31.5	0.0	16.0	41.2	11.8	0.0	0.0	25.4	5.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	31.5	0.0	16.0	41.2	11.8	0.0	0.0	25.4	5.9
LOS by Move:	A	A	A	C	A	B	D	B	A	A	C	A
HCM2kAvgQ:	0	0	0	4	0	3	4	5	0	0	5	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.033
Loss Time (sec):	12	Average Delay (sec/veh):	59.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0	1 0	0 1	0	0 1	0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	139	0	615	0	891	576	128	853	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	139	0	615	0	891	576	128	853	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	146	0	647	0	938	606	135	898	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	146	0	647	0	938	606	135	898	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	146	0	647	0	938	606	135	898	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.89	0.89	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.21	0.79	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2063	1334	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.40	0.00	0.45	0.45	0.07	0.25	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.38	0.00	0.38	0.00	0.43	0.43	0.08	0.52	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	1.05	0.00	1.05	1.05	0.90	0.48	0.00
Delay/Veh:	0.0	0.0	0.0	25.0	0.0	86.3	0.0	70.9	70.9	98.7	18.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	25.0	0.0	86.3	0.0	70.9	70.9	98.7	18.8	0.0
LOS by Move:	A	A	A	C	A	F	A	E	E	F	B	A
HCM2kAvgQ:	0	0	0	4	0	33	0	35	35	5	10	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.753
Loss Time (sec):	12	Average Delay (sec/veh):	26.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 2	0 0	2	0 1	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	139	0	615	0	891	576	128	853	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	139	0	615	0	891	576	128	853	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	146	0	647	0	938	606	135	898	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	146	0	647	0	938	606	135	898	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	146	0	647	0	938	606	135	898	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	1.00	0.95	0.85	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	2842	0	3610	1615	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.23	0.00	0.26	0.38	0.07	0.25	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.30	0.00	0.30	0.00	0.50	0.50	0.10	0.60	0.00
Volume/Cap:	0.00	0.00	0.00	0.27	0.00	0.75	0.00	0.52	0.75	0.75	0.42	0.00
Delay/Veh:	0.0	0.0	0.0	32.0	0.0	41.6	0.0	20.7	28.2	69.1	13.1	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.0	0.0	41.6	0.0	20.7	28.2	69.1	13.1	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	E	B	A
HCM2kAvgQ:	0	0	0	4	0	14	0	12	17	5	9	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.546
Loss Time (sec):	12	Average Delay (sec/veh):	33.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	381	0	221	164	486	0	0	294	190
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	381	0	221	164	486	0	0	294	190
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	401	0	233	173	512	0	0	309	200
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	401	0	233	173	512	0	0	309	200
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	401	0	233	173	512	0	0	309	200
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.22	0.00	0.14	0.10	0.27	0.00	0.00	0.16	0.12
Crit Moves:				****				****				
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.31	0.37	0.59	0.00	0.00	0.22	0.22
Volume/Cap:	0.00	0.00	0.00	0.73	0.00	0.47	0.26	0.45	0.00	0.00	0.73	0.55
Delay/Veh:	0.0	0.0	0.0	42.0	0.0	34.5	26.5	13.8	0.0	0.0	49.4	43.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.0	0.0	34.5	26.5	13.8	0.0	0.0	49.4	43.1
LOS by Move:	A	A	A	D	A	C	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	14	0	7	4	10	0	0	11	6

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.905
Loss Time (sec):	12	Average Delay (sec/veh):	48.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	457	0	206	0	0	0	612	418	0	0	524	240
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	457	0	206	0	0	0	612	418	0	0	524	240
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	481	0	217	0	0	0	644	440	0	0	552	253
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	481	0	217	0	0	0	644	440	0	0	552	253
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	481	0	217	0	0	0	644	440	0	0	552	253
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.91	0.91
Lanes:	0.69	0.00	0.31	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.37	0.63
Final Sat.:	1213	0	547	0	0	0	3502	1900	0	0	2360	1081
Capacity Analysis Module:												
Vol/Sat:	0.40	0.00	0.40	0.00	0.00	0.00	0.18	0.23	0.00	0.00	0.23	0.23
Crit Moves:			****				****				****	
Green/Cycle:	0.44	0.00	0.44	0.00	0.00	0.00	0.20	0.46	0.00	0.00	0.26	0.26
Volume/Cap:	0.90	0.00	0.90	0.00	0.00	0.00	0.90	0.50	0.00	0.00	0.90	0.90
Delay/Veh:	45.5	0.0	45.5	0.0	0.0	0.0	61.8	23.1	0.0	0.0	55.7	55.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.5	0.0	45.5	0.0	0.0	0.0	61.8	23.1	0.0	0.0	55.7	55.7
LOS by Move:	D		A	D	A	A	A	E	C	A	A	E	E
HCM2kAvgQ:	27	0	27	0	0	0	11	10	0	0	19	19

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.895
Loss Time (sec):	12	Average Delay (sec/veh):	37.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	106	0	68	0	0	0	362	505	0	0	378	817
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	106	0	68	0	0	0	362	505	0	0	378	817
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	112	0	72	0	0	0	381	532	0	0	398	860
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	112	0	72	0	0	0	381	532	0	0	398	860
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	112	0	72	0	0	0	381	532	0	0	398	860
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.04	0.00	0.00	0.00	0.21	0.28	0.00	0.00	0.21	0.53
Crit Moves:	****						****					****
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.22	0.78	0.00	0.00	0.56	0.56
Volume/Cap:	0.49	0.00	0.35	0.00	0.00	0.00	0.96	0.36	0.00	0.00	0.38	0.96
Delay/Veh:	50.7	0.0	49.1	0.0	0.0	0.0	80.9	4.4	0.0	0.0	15.3	46.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.7	0.0	49.1	0.0	0.0	0.0	80.9	4.4	0.0	0.0	15.3	46.2
LOS by Move:	D	A	D	A	A	A	F	A	A	A	B	D
HCM2kAvgQ:	4	0	3	0	0	0	16	6	0	0	8	34

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.347
Loss Time (sec): 12 Average Delay (sec/veh): 16.9
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	68	0	129	188	385	0	0	1066	111
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	68	0	129	188	385	0	0	1066	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	72	0	136	198	405	0	0	1122	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	72	0	136	198	405	0	0	1122	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	72	0	136	198	405	0	0	1122	117
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.04	0.00	0.05	0.06	0.11	0.00	0.00	0.22	0.07
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.32	0.15	0.73	0.00	0.00	0.58	0.58
Volume/Cap:	0.00	0.00	0.00	0.24	0.00	0.15	0.37	0.15	0.00	0.00	0.37	0.12
Delay/Veh:	0.0	0.0	0.0	43.8	0.0	29.3	46.2	4.8	0.0	0.0	13.5	11.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	43.8	0.0	29.3	46.2	4.8	0.0	0.0	13.5	11.4
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	B
HCM2kAvgQ:	0	0	0	2	0	2	3	2	0	0	8	2

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.197
Loss Time (sec):	16	Average Delay (sec/veh):	107.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	543	858	242	233	138	70	27	322	104	60	563	621
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	543	858	242	233	138	70	27	322	104	60	563	621
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	572	903	255	245	145	74	28	339	109	63	593	654
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	572	903	255	245	145	74	28	339	109	63	593	654
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	572	903	255	245	145	74	28	339	109	63	593	654
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.90	0.90	0.95	1.00	0.85	0.95	0.84	0.84
Lanes:	2.00	1.00	1.00	1.00	1.33	0.67	1.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	2273	1153	1805	1900	1615	1805	3185	1592
Capacity Analysis Module:												
Vol/Sat:	0.16	0.48	0.16	0.14	0.06	0.06	0.02	0.18	0.07	0.03	0.19	0.41
Crit Moves:		****			****			****				****
Green/Cycle:	0.23	0.36	0.36	0.10	0.24	0.24	0.08	0.27	0.27	0.13	0.31	0.31
Volume/Cap:	0.70	1.30	0.43	1.30	0.27	0.27	0.19	0.66	0.25	0.28	0.59	1.30
Delay/Veh:	45.1	185	29.3	223.7	37.5	37.5	51.8	41.9	34.5	48.1	35.1	185.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.1	185	29.3	223.7	37.5	37.5	51.8	41.9	34.5	48.1	35.1	185.7
LOS by Move:	D	F	C	F	D	D	D	D	C	D	D	F
HCM2kAvgQ:	11	60	7	18	3	3	1	11	3	2	11	49

Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	378	132	60	619	621	574	858	242	233	138	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16	12	12	16	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1553	1770	5085	1771	3433	3539	1794	3433	3312	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1553	1770	5085	1771	3433	3539	1794	3433	3312	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	378	132	60	619	621	574	858	242	233	138	88
RTOR Reduction (vph)	0	0	106	0	0	51	0	0	134	0	56	0
Lane Group Flow (vph)	39	378	26	60	619	570	574	858	108	233	170	0
Confl. Peds. (#/hr)			5			5						5
Turn Type	Prot		Perm	Prot		pm+ov	Prot		Perm	Prot		
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	3.6	23.9	23.9	8.2	28.5	46.9	28.5	53.5	53.5	18.4	43.4	
Effective Green, g (s)	3.6	23.9	23.9	8.2	28.5	46.9	28.5	53.5	53.5	18.4	43.4	
Actuated g/C Ratio	0.03	0.20	0.20	0.07	0.24	0.39	0.24	0.45	0.45	0.15	0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	53	705	309	121	1208	692	815	1578	800	526	1198	
v/s Ratio Prot	0.02	0.11		c0.03	0.12	c0.13	c0.17	c0.24		0.07	0.05	
v/s Ratio Perm			0.02			0.20			0.06			
v/c Ratio	0.74	0.54	0.09	0.50	0.51	0.82	0.70	0.54	0.13	0.44	0.14	
Uniform Delay, d1	57.7	43.1	39.1	53.9	39.7	32.8	41.9	24.3	19.6	46.1	25.8	
Progression Factor	0.96	0.80	1.26	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	40.8	2.9	0.5	3.2	1.6	7.9	2.8	1.4	0.4	0.6	0.2	
Delay (s)	96.4	37.4	49.9	57.1	41.3	40.7	44.7	25.7	20.0	46.7	26.0	
Level of Service	F	D	D	E	D	D	D	C	B	D	C	
Approach Delay (s)		44.6			41.7			31.4			36.5	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM Average Control Delay	37.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.532
Loss Time (sec):	0	Average Delay (sec/veh):	13.9
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	94	109	133	31	103	2	4	80	203	213	135	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	109	133	31	103	2	4	80	203	213	135	20
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	94	109	133	31	103	2	4	80	203	213	135	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	99	115	140	33	108	2	4	84	214	224	142	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	99	115	140	33	108	2	4	84	214	224	142	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	99	115	140	33	108	2	4	84	214	224	142	21
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.45	0.55	1.00	0.98	0.02	1.00	0.28	0.72	1.00	1.00	1.00
Final Sat.:	474	244	297	440	462	9	478	158	401	469	500	549
Capacity Analysis Module:												
Vol/Sat:	0.21	0.47	0.47	0.07	0.23	0.23	0.01	0.53	0.53	0.48	0.28	0.04
Crit Moves:			****			****			****	****		
Delay/Veh:	11.7	14.2	14.2	10.9	11.8	11.8	9.9	15.1	15.1	16.3	12.2	9.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	11.7	14.2	14.2	10.9	11.8	11.8	9.9	15.1	15.1	16.3	12.2	9.1
LOS by Move:	B	B	B	B	B	B	A	C	C	C	B	A
ApproachDel:	13.5			11.6			15.0			14.4		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	13.5			11.6			15.0			14.4		
LOS by Appr:	B			B			C			B		
AllWayAvgQ:	0.2	0.8	0.8	0.1	0.3	0.3	0.0	1.0	1.0	0.8	0.4	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.420
Loss Time (sec):	8	Average Delay (sec/veh):	11.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1	0 1
Volume Module:												
Base Vol:	94	109	133	31	103	2	4	80	203	213	135	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	94	109	133	31	103	2	4	80	203	213	135	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	99	115	140	33	108	2	4	84	214	224	142	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	99	115	140	33	108	2	4	84	214	224	142	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	99	115	140	33	108	2	4	84	214	224	142	21
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.68	0.92	0.92	0.52	1.00	1.00	0.66	0.89	0.89	0.54	1.00	0.85
Lanes:	1.00	0.45	0.55	1.00	0.98	0.02	1.00	0.28	0.72	1.00	1.00	1.00
Final Sat.:	1296	786	959	996	1858	36	1256	479	1216	1028	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.08	0.15	0.15	0.03	0.06	0.06	0.00	0.18	0.18	0.22	0.07	0.01
Crit Moves:		****								****		
Green/Cycle:	0.35	0.35	0.35	0.35	0.35	0.35	0.52	0.52	0.52	0.52	0.52	0.52
Volume/Cap:	0.22	0.42	0.42	0.09	0.17	0.17	0.01	0.34	0.34	0.42	0.14	0.03
Delay/Veh:	14.1	15.4	15.4	13.3	13.7	13.7	7.0	8.6	8.6	9.4	7.6	7.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.1	15.4	15.4	13.3	13.7	13.7	7.0	8.6	8.6	9.4	7.6	7.0
LOS by Move:	B	B	B	B	B	B	A	A	A	A	A	A
HCM2kAvgQ:	1	4	4	0	1	1	0	3	3	3	1	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.749
Loss Time (sec):	0	Average Delay (sec/veh):	17.0
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	49	283	174	15	301	33	18	7	37	11	13	180
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	283	174	15	301	33	18	7	37	11	13	180
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	52	298	183	16	317	35	19	7	39	12	14	189
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	298	183	16	317	35	19	7	39	12	14	189
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	52	298	183	16	317	35	19	7	39	12	14	189
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.62	0.38	1.00	0.90	0.10	0.29	0.11	0.60	0.05	0.06	0.89
Final Sat.:	560	398	245	539	536	59	142	55	292	31	36	504
Capacity Analysis Module:												
Vol/Sat:	0.09	0.75	0.75	0.03	0.59	0.59	0.13	0.13	0.13	0.38	0.38	0.38
Crit Moves:		****			****				****		****	
Delay/Veh:	9.6	22.0	22.0	9.3	16.2	16.2	10.1	10.1	10.1	11.6	11.6	11.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.6	22.0	22.0	9.3	16.2	16.2	10.1	10.1	10.1	11.6	11.6	11.6
LOS by Move:	A	C	C	A	C	C	B	B	B	B	B	B
ApproachDel:	20.8			15.9			10.1			11.6		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	20.8			15.9			10.1			11.6		
LOS by Appr:	C			C			B			B		
AllWayAvgQ:	0.1	2.5	2.5	0.0	1.3	1.3	0.1	0.1	0.1	0.5	0.5	0.5

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.977
Loss Time (sec):	0	Average Delay (sec/veh):	32.7
Optimal Cycle:	0	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	279	0	29	56	374	0	0	397	571
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	279	0	29	56	374	0	0	397	571
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	279	0	29	56	374	0	0	397	571
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	294	0	31	59	394	0	0	418	601
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	294	0	31	59	394	0	0	418	601
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	294	0	31	59	394	0	0	418	601
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	441	0	510	424	908	0	0	545	615
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.67	xxxx	0.06	0.14	0.43	xxxx	xxxx	0.77	0.98
Crit Moves:				****				****				****
Delay/Veh:	0.0	0.0	0.0	24.7	0.0	10.0	12.3	16.2	0.0	0.0	27.1	54.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	24.7	0.0	10.0	12.3	16.2	0.0	0.0	27.1	54.5
LOS by Move:	*	*	*	C	*	A	B	C	*	*	D	F
ApproachDel:	xxxxxx			23.3			15.7			43.3		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			23.3			15.7			43.3		
LOS by Appr:	*			C			C			E		
AllWayAvgQ:	0.0	0.0	0.0	1.7	0.0	0.1	0.2	0.7	0.0	0.0	2.7	7.8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.845
Loss Time (sec): 12 Average Delay (sec/veh): 25.3
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	137	0	166	0	0	0	0	1676	232	195	823	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	137	0	166	0	0	0	0	1676	232	195	823	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	144	0	175	0	0	0	0	1764	244	205	866	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	144	0	175	0	0	0	0	1764	244	205	866	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	144	0	175	0	0	0	0	1764	244	205	866	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.76	0.24	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3114	431	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.08	0.00	0.11	0.00	0.00	0.00	0.00	0.57	0.57	0.11	0.24	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.64	0.64	0.13	0.77	0.00
Volume/Cap:	0.62	0.00	0.84	0.00	0.00	0.00	0.00	0.88	0.88	0.88	0.31	0.00
Delay/Veh:	54.8	0.0	77.1	0.0	0.0	0.0	0.0	22.0	22.0	81.2	4.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	54.8	0.0	77.1	0.0	0.0	0.0	0.0	22.0	22.0	81.2	4.2	0.0
LOS by Move:	D	A	E	A	A	A	A	C	C	F	A	A
HCM2kAvgQ:	6	0	9	0	0	0	0	35	35	8	5	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.479
Loss Time (sec):	0	Average Delay (sec/veh):	10.6
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0	1! 0 0
Volume Module:												
Base Vol:	38	169	11	8	318	101	56	1	24	2	2	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	38	169	11	8	318	101	56	1	24	2	2	6
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	38	169	11	8	318	101	56	1	24	2	2	6
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	40	178	12	8	335	106	59	1	0	2	2	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	40	178	12	8	335	106	59	1	0	2	2	6
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	40	178	12	8	335	106	59	1	0	2	2	6
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.02	0.98	1.00	0.98	0.02	1.00	0.20	0.20	0.60
Final Sat.:	576	630	712	18	700	832	505	9	618	114	114	341
Capacity Analysis Module:												
Vol/Sat:	0.07	0.28	0.02	0.48	0.48	0.13	0.12	0.12	0.00	0.02	0.02	0.02
Crit Moves:		****			****			****			****	
Delay/Veh:	9.2	10.4	7.7	12.0	12.0	7.6	10.0	10.0	0.0	8.9	8.9	8.9
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.2	10.4	7.7	12.0	12.0	7.6	10.0	10.0	0.0	8.9	8.9	8.9
LOS by Move:	A	B	A	B	B	A	B	B	*	A	A	A
ApproachDel:	10.1			11.0			10.0			8.9		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.1			11.0			10.0			8.9		
LOS by Appr:	B			B			B			A		
AllWayAvgQ:	0.1	0.4	0.0	0.9	0.9	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #6 Bedford Cyn. Rd. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.565
Loss Time (sec):	12	Average Delay (sec/veh):	24.5
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Ovl		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	2	0 1
Volume Module:												
Base Vol:	0	0	0	392	0	209	101	552	0	0	759	145
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	392	0	209	101	552	0	0	759	145
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	392	0	209	101	552	0	0	759	145
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	413	0	220	106	581	0	0	799	153
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	413	0	220	106	581	0	0	799	153
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	413	0	220	106	581	0	0	799	153
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.95	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	2.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.23	0.00	0.14	0.06	0.16	0.00	0.00	0.22	0.09
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.40	0.00	0.51	0.10	0.50	0.00	0.00	0.39	0.80
Volume/Cap:	0.00	0.00	0.00	0.57	0.00	0.27	0.57	0.32	0.00	0.00	0.57	0.12
Delay/Veh:	0.0	0.0	0.0	28.6	0.0	17.0	55.1	18.3	0.0	0.0	29.1	2.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	28.6	0.0	17.0	55.1	18.3	0.0	0.0	29.1	2.8
LOS by Move:	A	A	A	C	A	B	E	B	A	A	C	A
HCM2kAvgQ:	0	0	0	12	0	5	5	7	0	0	11	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.028
Loss Time (sec):	12	Average Delay (sec/veh):	72.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0	1 0	0 1	0	0 1	0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	114	0	492	0	989	853	47	526	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	114	0	492	0	989	853	47	526	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	120	0	518	0	1041	898	49	554	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	120	0	518	0	1041	898	49	554	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	120	0	518	0	1041	898	49	554	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.88	0.88	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.07	0.93	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1805	1556	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.07	0.00	0.32	0.00	0.58	0.58	0.03	0.15	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.52	0.52	0.08	0.61	0.00
Volume/Cap:	0.00	0.00	0.00	0.23	0.00	1.10	0.00	1.10	1.10	0.33	0.25	0.00
Delay/Veh:	0.0	0.0	0.0	32.5	0.0	113.6	0.0	82.5	82.5	53.1	10.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.5	0.0	113.6	0.0	82.5	82.5	53.1	10.9	0.0
LOS by Move:	A	A	A	C	A	F	A	F	F	D	B	A
HCM2kAvgQ:	0	0	0	3	0	29	0	48	48	2	5	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.851
Loss Time (sec): 12 Average Delay (sec/veh): 27.0
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 2	0 0	2	0 1	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	114	0	492	0	989	853	47	526	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	114	0	492	0	989	853	47	526	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	120	0	518	0	1041	898	49	554	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	120	0	518	0	1041	898	49	554	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	120	0	518	0	1041	898	49	554	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	1.00	0.95	0.85	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	2842	0	3610	1615	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.07	0.00	0.18	0.00	0.29	0.56	0.03	0.15	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.62	0.62	0.08	0.70	0.00
Volume/Cap:	0.00	0.00	0.00	0.33	0.00	0.90	0.00	0.47	0.90	0.33	0.22	0.00
Delay/Veh:	0.0	0.0	0.0	41.5	0.0	64.5	0.0	12.6	31.4	53.1	6.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	41.5	0.0	64.5	0.0	12.6	31.4	53.1	6.5	0.0
LOS by Move:	A	A	A	D	A	E	A	B	C	D	A	A
HCM2kAvgQ:	0	0	0	4	0	14	0	10	28	2	4	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.977
Loss Time (sec):	12	Average Delay (sec/veh):	52.5
Optimal Cycle:	120	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	638	0	293	290	654	0	0	611	187
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	638	0	293	290	654	0	0	611	187
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	638	0	293	290	654	0	0	611	187
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	672	0	308	305	688	0	0	643	197
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	672	0	308	305	688	0	0	643	197
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	672	0	308	305	688	0	0	643	197
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.37	0.00	0.19	0.17	0.36	0.00	0.00	0.34	0.12
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.38	0.00	0.38	0.17	0.52	0.00	0.00	0.35	0.35
Volume/Cap:	0.00	0.00	0.00	0.98	0.00	0.50	0.98	0.70	0.00	0.00	0.98	0.35
Delay/Veh:	0.0	0.0	0.0	65.3	0.0	29.1	94.0	24.0	0.0	0.0	68.1	29.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	65.3	0.0	29.1	94.0	24.0	0.0	0.0	68.1	29.6
LOS by Move:	A	A	A	E	A	C	F	C	A	A	E	C
HCM2kAvgQ:	0	0	0	30	0	9	14	19	0	0	23	5

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.720
Loss Time (sec):	12	Average Delay (sec/veh):	32.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	414	0	110	0	0	0	493	610	0	0	159	85
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	414	0	110	0	0	0	493	610	0	0	159	85
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	436	0	116	0	0	0	519	642	0	0	167	89
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	436	0	116	0	0	0	519	642	0	0	167	89
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	436	0	116	0	0	0	519	642	0	0	167	89
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.94	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.90	0.90
Lanes:	0.79	0.00	0.21	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.30	0.70
Final Sat.:	1404	0	373	0	0	0	3502	1900	0	0	2230	1192
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.31	0.00	0.00	0.00	0.15	0.34	0.00	0.00	0.08	0.08
Crit Moves:	****							****				
Green/Cycle:	0.37	0.00	0.37	0.00	0.00	0.00	0.40	0.53	0.00	0.00	0.13	0.13
Volume/Cap:	0.83	0.00	0.83	0.00	0.00	0.00	0.37	0.64	0.00	0.00	0.60	0.60
Delay/Veh:	43.0	0.0	43.0	0.0	0.0	0.0	25.4	21.7	0.0	0.0	52.0	52.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	43.0	0.0	43.0	0.0	0.0	0.0	25.4	21.7	0.0	0.0	52.0	52.0
LOS by Move:	D	A	D	A	A	A	C	C	A	A	D	D
HCM2kAvgQ:	21	0	21	0	0	0	6	15	0	0	6	6

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.833
Loss Time (sec):	12	Average Delay (sec/veh):	78.3
Optimal Cycle:	120	Level Of Service:	E

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Split Phase				Split Phase				Protected				Permitted			
Rights:	Include				Include				Include				Include			
Min. Green:	15	0	15		0	0	0		10	15	0		0	15	15	
Y+R:	4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0		4.0	4.0	4.0	
Lanes:	0	1 0	0	1	0	0 0	0	0	1	0 1	0	0	0	0 1	0	1
Volume Module:																
Base Vol:	252	0	271		0	0	0		257	1035	0		0	546	449	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	252	0	271		0	0	0		257	1035	0		0	546	449	
Added Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	252	0	271		0	0	0		257	1035	0		0	546	449	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.95	
PHF Volume:	265	0	285		0	0	0		271	1089	0		0	575	473	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	265	0	285		0	0	0		271	1089	0		0	575	473	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
FinalVolume:	265	0	285		0	0	0		271	1089	0		0	575	473	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	1.00	0.85		1.00	1.00	1.00		0.95	1.00	1.00		1.00	1.00	0.85	
Lanes:	1.00	0.00	1.00		0.00	0.00	0.00		1.00	1.00	0.00		0.00	1.00	1.00	
Final Sat.:	1809	0	1615		0	0	0		1805	1900	0		0	1900	1615	
Capacity Analysis Module:																
Vol/Sat:	0.15	0.00	0.18		0.00	0.00	0.00		0.15	0.57	0.00		0.00	0.30	0.29	
Crit Moves:			****							****						
Green/Cycle:	0.15	0.00	0.15		0.00	0.00	0.00		0.49	0.75	0.00		0.00	0.26	0.26	
Volume/Cap:	0.97	0.00	1.17		0.00	0.00	0.00		0.31	0.77	0.00		0.00	1.17	1.13	
Delay/Veh:	97.0	0.0	162.2		0.0	0.0	0.0		18.5	11.4	0.0		0.0	141	129.4	
User DelAdj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	97.0	0.0	162.2		0.0	0.0	0.0		18.5	11.4	0.0		0.0	141	129.4	
LOS by Move:	F	A	F		A	A	A		B	B	A		A	F	F	
HCM2kAvgQ:	14	0	19		0	0	0		6	23	0		0	32	25	

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.567
Loss Time (sec):	12	Average Delay (sec/veh):	26.6
Optimal Cycle:	120	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	363	0	577	672	584	0	0	466	155
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	363	0	577	672	584	0	0	466	155
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	0	363	0	577	672	584	0	0	466	155
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	382	0	607	707	615	0	0	491	163
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	382	0	607	707	615	0	0	491	163
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	382	0	607	707	615	0	0	491	163
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.21	0.00	0.21	0.20	0.17	0.00	0.00	0.09	0.10
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.38	0.00	0.73	0.36	0.52	0.00	0.00	0.17	0.17
Volume/Cap:	0.00	0.00	0.00	0.56	0.00	0.29	0.57	0.33	0.00	0.00	0.57	0.61
Delay/Veh:	0.0	0.0	0.0	30.6	0.0	5.5	31.8	16.5	0.0	0.0	46.9	50.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	30.6	0.0	5.5	31.8	16.5	0.0	0.0	46.9	50.2
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	11	0	4	10	6	0	0	6	6

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 Without Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.319
Loss Time (sec):	16	Average Delay (sec/veh):	142.6
Optimal Cycle:	120	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	203	675	49	599	520	57	115	632	298	119	265	461
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	203	675	49	599	520	57	115	632	298	119	265	461
Added Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	203	675	49	599	520	57	115	632	298	119	265	461
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	214	711	52	631	547	60	121	665	314	125	279	485
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	214	711	52	631	547	60	121	665	314	125	279	485
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	214	711	52	631	547	60	121	665	314	125	279	485
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.94	0.94	0.95	1.00	0.85	0.95	0.82	0.82
Lanes:	2.00	1.00	1.00	1.00	1.80	0.20	1.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	3205	351	1805	1900	1615	1805	3129	1565
Capacity Analysis Module:												
Vol/Sat:	0.06	0.37	0.03	0.35	0.17	0.17	0.07	0.35	0.19	0.07	0.09	0.31
Crit Moves:		****		****				****		****		
Green/Cycle:	0.17	0.27	0.27	0.25	0.35	0.35	0.08	0.26	0.26	0.08	0.26	0.26
Volume/Cap:	0.35	1.37	0.12	1.37	0.48	0.48	0.80	1.37	0.76	0.83	0.35	1.21
Delay/Veh:	44.1	222	32.9	224.7	30.4	30.4	80.2	224	49.3	85.1	36.6	155.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	44.1	222	32.9	224.7	30.4	30.4	80.2	224	49.3	85.1	36.6	155.0
LOS by Move:	D	F	C	F	C	C	F	F	D	F	D	F
HCM2kAvgQ:	4	51	1	46	9	9	5	46	11	7	5	34

Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	632	298	119	265	461	203	675	49	599	520	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16	12	12	16	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1555	1770	5085	1774	3433	3539	1794	3433	3481	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1555	1770	5085	1774	3433	3539	1794	3433	3481	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	115	632	298	119	265	461	203	675	49	599	520	57
RTOR Reduction (vph)	0	0	220	0	0	50	0	0	35	0	7	0
Lane Group Flow (vph)	115	632	78	119	265	411	203	675	14	599	570	0
Confl. Peds. (#/hr)			5			5						5
Turn Type	Prot		Perm	Prot		pm+ov	Prot		Perm	Prot		
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	12.1	31.3	31.3	12.2	31.4	58.7	12.5	33.2	33.2	27.3	48.0	
Effective Green, g (s)	12.1	31.3	31.3	12.2	31.4	58.7	12.5	33.2	33.2	27.3	48.0	
Actuated g/C Ratio	0.10	0.26	0.26	0.10	0.26	0.49	0.10	0.28	0.28	0.23	0.40	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	178	923	406	180	1331	868	358	979	496	781	1392	
v/s Ratio Prot	0.06	c0.18		c0.07	0.05	0.11	0.06	c0.19		c0.17	0.16	
v/s Ratio Perm			0.05			0.12			0.01			
v/c Ratio	0.65	0.68	0.19	0.66	0.20	0.47	0.57	0.69	0.03	0.77	0.41	
Uniform Delay, d1	51.9	39.9	34.5	51.9	34.5	20.4	51.2	38.8	31.6	43.4	25.8	
Progression Factor	0.83	0.79	1.34	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.4	3.9	1.0	8.8	0.3	0.4	2.1	4.0	0.1	4.5	0.9	
Delay (s)	50.3	35.4	47.3	60.7	34.8	20.8	53.2	42.8	31.7	47.9	26.7	
Level of Service	D	D	D	E	C	C	D	D	C	D	C	
Approach Delay (s)		40.4			30.8			44.5			37.5	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX 5.7

2035 With Project Conditions
Intersection Operations Analysis Worksheets

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.296
Loss Time (sec):	0	Average Delay (sec/veh):	69.0
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	140	256	321	191	172	6	6	190	122	148	104	165
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	140	256	321	191	172	6	6	190	122	148	104	165
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	147	269	338	201	181	6	6	200	128	156	109	174
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	147	269	338	201	181	6	6	200	128	156	109	174
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	147	269	338	201	181	6	6	200	128	156	109	174
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.44	0.56	1.00	0.97	0.03	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	413	208	261	393	402	14	387	260	167	364	382	414
Capacity Analysis Module:												
Vol/Sat:	0.36	1.30	1.30	0.51	0.45	0.45	0.02	0.77	0.77	0.43	0.29	0.42
Crit Moves:		****		****					****	****		
Delay/Veh:	15.8	171	171.2	20.4	17.7	17.7	11.9	32.9	32.9	19.2	15.4	17.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.8	171	171.2	20.4	17.7	17.7	11.9	32.9	32.9	19.2	15.4	17.0
LOS by Move:	C	F	F	C	C	C	B	D	D	C	C	C
ApproachDel:	140.9			19.1			32.5			17.4		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	140.9			19.1			32.5			17.4		
LOS by Appr:	F			C			D			C		
AllWayAvgQ:	0.5	20.9	20.9	1.0	0.8	0.8	0.0	2.6	2.6	0.7	0.4	0.7

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.634
Loss Time (sec):	8	Average Delay (sec/veh):	13.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	140	256	321	191	172	6	6	190	122	148	104	165
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	140	256	321	191	172	6	6	190	122	148	104	165
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	147	269	338	201	181	6	6	200	128	156	109	174
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	147	269	338	201	181	6	6	200	128	156	109	174
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	147	269	338	201	181	6	6	200	128	156	109	174
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.63	0.92	0.92	0.30	1.00	1.00	0.68	0.94	0.94	0.41	1.00	0.85
Lanes:	1.00	0.44	0.56	1.00	0.97	0.03	1.00	0.61	0.39	1.00	1.00	1.00
Final Sat.:	1203	773	969	578	1827	64	1298	1089	699	775	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.12	0.35	0.35	0.35	0.10	0.10	0.00	0.18	0.18	0.20	0.06	0.11
Crit Moves:		****								****		
Green/Cycle:	0.55	0.55	0.55	0.55	0.55	0.55	0.32	0.32	0.32	0.32	0.32	0.32
Volume/Cap:	0.22	0.63	0.63	0.63	0.18	0.18	0.02	0.58	0.58	0.63	0.18	0.34
Delay/Veh:	7.1	10.7	10.7	13.5	6.8	6.8	14.1	18.7	18.7	22.9	15.0	16.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.1	10.7	10.7	13.5	6.8	6.8	14.1	18.7	18.7	22.9	15.0	16.1
LOS by Move:	A	B	B	B	A	A	B	B	B	C	B	B
HCM2kAvgQ:	2	9	9	4	2	2	0	6	6	4	2	3

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bonnett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.402
Loss Time (sec):	0	Average Delay (sec/veh):	10.4
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	7	240	13	28	253	12	44	9	32	17	3	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	240	13	28	253	12	44	9	32	17	3	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	7	253	14	29	266	13	46	9	34	18	3	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	253	14	29	266	13	46	9	34	18	3	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	253	14	29	266	13	46	9	34	18	3	34
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.95	0.05	1.00	0.95	0.05	0.52	0.10	0.38	0.33	0.06	0.61
Final Sat.:	622	652	35	626	662	31	325	66	236	207	37	390
Capacity Analysis Module:												
Vol/Sat:	0.01	0.39	0.39	0.05	0.40	0.40	0.14	0.14	0.14	0.09	0.09	0.09
Crit Moves:		****			****		****			****		
Delay/Veh:	8.4	10.9	10.9	8.6	11.1	11.1	9.0	9.0	9.0	8.6	8.6	8.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	10.9	10.9	8.6	11.1	11.1	9.0	9.0	9.0	8.6	8.6	8.6
LOS by Move:	A	B	B	A	B	B	A	A	A	A	A	A
ApproachDel:	10.8			10.8			9.0			8.6		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	10.8			10.8			9.0			8.6		
LOS by Appr:	B			B			A			A		
AllWayAvgQ:	0.0	0.6	0.6	0.0	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.239
Loss Time (sec):	8	Average Delay (sec/veh):	7.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	7	240	13	28	253	12	44	9	32	17	3	32
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	240	13	28	253	12	44	9	32	17	3	32
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	7	253	14	29	266	13	46	9	34	18	3	34
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	253	14	29	266	13	46	9	34	18	3	34
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	253	14	29	266	13	46	9	34	18	3	34
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.58	0.99	0.99	0.59	0.99	0.99	0.80	0.80	0.80	0.84	0.84	0.84
Lanes:	1.00	0.95	0.05	1.00	0.95	0.05	0.52	0.10	0.38	0.33	0.06	0.61
Final Sat.:	1098	1788	97	1119	1801	85	787	161	572	519	92	977
Capacity Analysis Module:												
Vol/Sat:	0.01	0.14	0.14	0.03	0.15	0.15	0.06	0.06	0.06	0.03	0.03	0.03
Crit Moves:					****			****				
Green/Cycle:	0.62	0.62	0.62	0.62	0.62	0.62	0.25	0.25	0.25	0.25	0.25	0.25
Volume/Cap:	0.01	0.23	0.23	0.04	0.24	0.24	0.24	0.24	0.24	0.14	0.14	0.14
Delay/Veh:	4.4	5.2	5.2	4.6	5.3	5.3	18.3	18.3	18.3	17.6	17.6	17.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	4.4	5.2	5.2	4.6	5.3	5.3	18.3	18.3	18.3	17.6	17.6	17.6
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	0	2	2	0	2	2	1	1	1	1	1	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.852
Loss Time (sec):	0	Average Delay (sec/veh):	37.1
Optimal Cycle:	0	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	335	0	81	59	699	0	0	577	185
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	335	0	81	59	699	0	0	577	185
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	353	0	85	62	736	0	0	607	195
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	353	0	85	62	736	0	0	607	195
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	353	0	85	62	736	0	0	607	195
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.51	0.49
Final Sat.:	0	0	0	414	0	461	405	876	0	0	727	240
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	0.85	xxxx	0.18	0.15	0.84	xxxx	xxxx	0.84	0.81
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	42.9	0.0	11.7	12.9	40.3	0.0	0.0	37.1	33.4
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	42.9	0.0	11.7	12.9	40.3	0.0	0.0	37.1	33.4
LOS by Move:	*	*	*	E	*	B	B	E	*	*	E	D
ApproachDel:	xxxxxx			36.8			38.2			36.2		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			36.8			38.2			36.2		
LOS by Appr:	*			E			E			E		
AllWayAvgQ:	0.0	0.0	0.0	3.6	0.0	0.2	0.2	3.6	0.0	0.0	3.8	3.2

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec): 65 Critical Vol./Cap.(X): 0.564
Loss Time (sec): 12 Average Delay (sec/veh): 16.3
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	335	0	81	59	699	0	0	577	185
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	335	0	81	59	699	0	0	577	185
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	353	0	85	62	736	0	0	607	195
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	353	0	85	62	736	0	0	607	195
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	353	0	85	62	736	0	0	607	195
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.92	0.92
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.51	0.49
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	2635	845
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.20	0.00	0.05	0.03	0.20	0.00	0.00	0.23	0.23
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.31	0.00	0.31	0.15	0.51	0.00	0.00	0.35	0.35
Volume/Cap:	0.00	0.00	0.00	0.63	0.00	0.17	0.22	0.40	0.00	0.00	0.65	0.65
Delay/Veh:	0.0	0.0	0.0	21.8	0.0	16.6	24.5	10.0	0.0	0.0	18.9	18.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	21.8	0.0	16.6	24.5	10.0	0.0	0.0	18.9	18.9
LOS by Move:	A	A	A	C	A	B	C	B	A	A	B	B
HCM2kAvgQ:	0	0	0	6	0	1	1	5	0	0	7	7

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.882
Loss Time (sec):	12	Average Delay (sec/veh):	32.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0	0	0 0	0	0	1 1 0	1	0	2 0 0
Volume Module:												
Base Vol:	221	0	312	0	0	0	0	1181	190	312	1179	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	221	0	312	0	0	0	0	1181	190	312	1179	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	233	0	328	0	0	0	0	1243	200	328	1241	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	233	0	328	0	0	0	0	1243	200	328	1241	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	233	0	328	0	0	0	0	1243	200	328	1241	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.93	0.93	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.72	0.28	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3044	490	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.13	0.00	0.20	0.00	0.00	0.00	0.00	0.41	0.41	0.18	0.34	0.00
Crit Moves:			****					****		****		
Green/Cycle:	0.23	0.00	0.23	0.00	0.00	0.00	0.00	0.46	0.46	0.21	0.67	0.00
Volume/Cap:	0.56	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.88	0.88	0.51	0.00
Delay/Veh:	42.5	0.0	65.6	0.0	0.0	0.0	0.0	35.2	35.2	67.2	10.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	42.5	0.0	65.6	0.0	0.0	0.0	0.0	35.2	35.2	67.2	10.2	0.0
LOS by Move:	D	A	E	A	A	A	A	D	D	E	B	A
HCM2kAvgQ:	8	0	15	0	0	0	0	28	28	13	12	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec): 0 Critical Vol./Cap.(X): 0.870
Loss Time (sec): 0 Average Delay (sec/veh): 23.5
Optimal Cycle: 0 Level Of Service: C

Approach:	North Bound				South Bound				East Bound				West Bound			
Movement:	L	- T	- R		L	- T	- R		L	- T	- R		L	- T	- R	
Control:	Stop Sign				Stop Sign				Stop Sign				Stop Sign			
Rights:	Include				Include				Ignore				Include			
Min. Green:	0	0	0		0	0	0		0	0	0		0	0	0	
Lanes:	1	0 1	0	1	0	1	0 0	1	0	1	0 0	1	0	0	1! 0	0
Volume Module:																
Base Vol:	22	212	10		35	535	53		89	5	55		2	2	2	
Growth Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Initial Bse:	22	212	10		35	535	53		89	5	55		2	2	2	
User Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	0.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.95		0.95	0.95	0.95		0.95	0.95	0.00		0.95	0.95	0.95	
PHF Volume:	23	223	11		37	563	56		94	5	0		2	2	2	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	23	223	11		37	563	56		94	5	0		2	2	2	
PCE Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	0.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	0.00		1.00	1.00	1.00	
FinalVolume:	23	223	11		37	563	56		94	5	0		2	2	2	
Saturation Flow Module:																
Adjustment:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
Lanes:	1.00	1.00	1.00		0.06	0.94	1.00		0.95	0.05	1.00		0.34	0.33	0.33	
Final Sat.:	515	562	620		42	648	792		457	26	571		165	165	165	
Capacity Analysis Module:																
Vol/Sat:	0.05	0.40	0.02		0.87	0.87	0.07		0.21	0.21	0.00		0.01	0.01	0.01	
Crit Moves:		****				****				****				****		
Delay/Veh:	9.8	12.8	8.3		31.9	31.9	7.5		11.6	11.6	0.0		9.9	9.9	9.9	
Delay Adj:	1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	
AdjDel/Veh:	9.8	12.8	8.3		31.9	31.9	7.5		11.6	11.6	0.0		9.9	9.9	9.9	
LOS by Move:	A	B	A		D	D	A		B	B	*		A	A	A	
ApproachDel:		12.4				29.8				11.6				9.9		
Delay Adj:		1.00				1.00				1.00				1.00		
ApprAdjDel:		12.4				29.8				11.6				9.9		
LOS by Appr:		B				D				B				A		
AllWayAvgQ:	0.0	0.6	0.0		4.6	4.6	0.1		0.2	0.2	0.0		0.0	0.0	0.0	

Note: Queue reported is the number of cars per lane.

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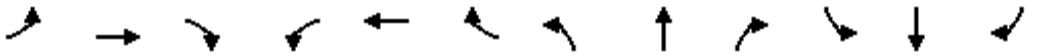

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	104	883	47	417	551	113	68	58	325	142	75	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5041		3433	3539	1537	1770	1863	2752	3433	1863	1559
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5041		3433	3539	1537	1770	1863	2752	3433	1863	1559
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	104	883	47	417	551	113	68	58	325	142	75	143
RTOR Reduction (vph)	0	5	0	0	0	58	0	0	38	0	0	89
Lane Group Flow (vph)	104	925	0	417	551	55	68	58	287	142	75	54
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	11.9	36.0		24.0	48.1	58.1	11.0	34.0	58.0	10.0	33.0	44.9
Effective Green, g (s)	11.9	36.0		24.0	48.1	58.1	11.0	34.0	58.0	10.0	33.0	44.9
Actuated g/C Ratio	0.10	0.30		0.20	0.40	0.48	0.09	0.28	0.48	0.08	0.28	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	176	1512		687	1419	744	162	528	1422	286	512	583
v/s Ratio Prot	0.06	c0.18		c0.12	0.16	0.01	0.04	0.03	c0.04	c0.04	0.04	0.01
v/s Ratio Perm						0.03			0.06			0.03
v/c Ratio	0.59	0.61		0.61	0.39	0.07	0.42	0.11	0.20	0.50	0.15	0.09
Uniform Delay, d1	51.7	36.0		43.7	25.5	16.6	51.5	31.8	17.7	52.6	32.9	24.3
Progression Factor	0.97	0.78		0.69	0.57	0.53	1.09	0.93	0.71	1.00	1.00	1.00
Incremental Delay, d2	5.0	1.8		1.5	0.8	0.2	7.8	0.4	0.1	6.0	0.6	0.1
Delay (s)	55.2	29.8		31.5	15.4	9.0	63.7	29.9	12.7	58.6	33.5	24.4
Level of Service	E	C		C	B	A	E	C	B	E	C	C
Approach Delay (s)		32.3			20.9			22.6			39.8	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.042
Loss Time (sec):	12	Average Delay (sec/veh):	60.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 1	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	139	0	615	0	917	576	128	876	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	139	0	615	0	917	576	128	876	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	146	0	647	0	965	606	135	922	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	146	0	647	0	965	606	135	922	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	146	0	647	0	965	606	135	922	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.89	0.89	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.23	0.77	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	2089	1312	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.40	0.00	0.46	0.46	0.07	0.26	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.38	0.00	0.38	0.00	0.44	0.44	0.08	0.52	0.00
Volume/Cap:	0.00	0.00	0.00	0.21	0.00	1.06	0.00	1.06	1.06	0.90	0.49	0.00
Delay/Veh:	0.0	0.0	0.0	25.3	0.0	89.5	0.0	73.7	73.7	98.7	18.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	25.3	0.0	89.5	0.0	73.7	73.7	98.7	18.7	0.0
LOS by Move:	A	A	A	C	A	F	A	E	E	F	B	A
HCM2kAvgQ:	0	0	0	4	0	33	0	36	36	5	11	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.753
Loss Time (sec):	12	Average Delay (sec/veh):	26.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 2	0 0	2	0 1	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	139	0	615	0	917	576	128	876	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	139	0	615	0	917	576	128	876	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	146	0	647	0	965	606	135	922	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	146	0	647	0	965	606	135	922	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	146	0	647	0	965	606	135	922	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	1.00	0.95	0.85	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	2842	0	3610	1615	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.08	0.00	0.23	0.00	0.27	0.38	0.07	0.26	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.30	0.00	0.30	0.00	0.50	0.50	0.10	0.60	0.00
Volume/Cap:	0.00	0.00	0.00	0.27	0.00	0.75	0.00	0.54	0.75	0.75	0.43	0.00
Delay/Veh:	0.0	0.0	0.0	32.0	0.0	41.6	0.0	20.9	28.2	69.1	13.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.0	0.0	41.6	0.0	20.9	28.2	69.1	13.2	0.0
LOS by Move:	A	A	A	C	A	D	A	C	C	E	B	A
HCM2kAvgQ:	0	0	0	4	0	14	0	12	17	5	9	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 1.012
Loss Time (sec): 12 Average Delay (sec/veh): 100.1
Optimal Cycle: OPTIMIZED Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	381	0	531	330	1020	0	0	550	190
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	381	0	531	330	1020	0	0	550	190
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	401	0	559	347	1074	0	0	579	200
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	401	0	559	347	1074	0	0	579	200
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	401	0	559	347	1074	0	0	579	200
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.22	0.00	0.35	0.19	0.57	0.00	0.00	0.30	0.12
Crit Moves:						****		****				
Green/Cycle:	0.00	0.00	0.00	0.26	0.00	0.26	0.42	0.64	0.00	0.00	0.23	0.23
Volume/Cap:	0.00	0.00	0.00	0.87	0.00	1.35	0.46	0.88	0.00	0.00	1.35	0.55
Delay/Veh:	0.0	0.0	0.0	58.5	0.0	217.8	25.6	25.0	0.0	0.0	219	42.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	58.5	0.0	217.8	25.6	25.0	0.0	0.0	219	42.9
LOS by Move:	A	A	A	E	A	F	C	C	A	A	F	D
HCM2kAvgQ:	0	0	0	17	0	40	9	34	0	0	39	6

Note: Queue reported is the number of cars per lane.

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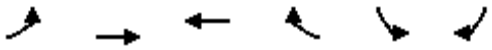

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↱	↰↰	↱↱
Volume (vph)	0	1350	550	190	381	531
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.91	0.95	1.00	0.97	0.88
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		5085	3539	1583	3433	2742
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		5085	3539	1583	3433	2742
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1350	550	190	381	531
RTOR Reduction (vph)	0	0	0	79	0	345
Lane Group Flow (vph)	0	1350	550	111	381	186
Confl. Peds. (#/hr)						5
Turn Type				Perm		Perm
Protected Phases		2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)		70.0	70.0	70.0	42.0	42.0
Effective Green, g (s)		70.0	70.0	70.0	42.0	42.0
Actuated g/C Ratio		0.58	0.58	0.58	0.35	0.35
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2966	2064	923	1202	960
v/s Ratio Prot		c0.27	0.16		c0.11	
v/s Ratio Perm				0.07		0.07
v/c Ratio		0.46	0.27	0.12	0.32	0.19
Uniform Delay, d1		14.2	12.3	11.2	28.5	27.2
Progression Factor		0.16	0.63	0.64	1.00	1.00
Incremental Delay, d2		0.4	0.3	0.3	0.7	0.4
Delay (s)		2.7	8.0	7.4	29.2	27.6
Level of Service		A	A	A	C	C
Approach Delay (s)		2.7	7.9		28.3	
Approach LOS		A	A		C	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.912
Loss Time (sec):	12	Average Delay (sec/veh):	49.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1 0	0	0	1 1 0
Volume Module:												
Base Vol:	457	0	206	0	0	0	612	444	0	0	547	240
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	457	0	206	0	0	0	612	444	0	0	547	240
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	481	0	217	0	0	0	644	467	0	0	576	253
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	481	0	217	0	0	0	644	467	0	0	576	253
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	481	0	217	0	0	0	644	467	0	0	576	253
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	1.00	0.93	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.91	0.91
Lanes:	0.69	0.00	0.31	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.39	0.61
Final Sat.:	1213	0	547	0	0	0	3502	1900	0	0	2394	1050
Capacity Analysis Module:												
Vol/Sat:	0.40	0.00	0.40	0.00	0.00	0.00	0.18	0.25	0.00	0.00	0.24	0.24
Crit Moves:			****				****				****	
Green/Cycle:	0.43	0.00	0.43	0.00	0.00	0.00	0.20	0.47	0.00	0.00	0.26	0.26
Volume/Cap:	0.91	0.00	0.91	0.00	0.00	0.00	0.91	0.53	0.00	0.00	0.91	0.91
Delay/Veh:	47.0	0.0	47.0	0.0	0.0	0.0	63.0	23.3	0.0	0.0	56.1	56.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.0	0.0	47.0	0.0	0.0	0.0	63.0	23.3	0.0	0.0	56.1	56.1
LOS by Move:	D	A	D	A	A	A	E	C	A	A	E	E
HCM2kAvgQ:	28	0	28	0	0	0	11	11	0	0	19	19

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.261
Loss Time (sec):	12	Average Delay (sec/veh):	111.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	253	0	68	0	0	0	780	621	0	0	487	817
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	253	0	68	0	0	0	780	621	0	0	487	817
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	266	0	72	0	0	0	821	654	0	0	513	860
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	266	0	72	0	0	0	821	654	0	0	513	860
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	266	0	72	0	0	0	821	654	0	0	513	860
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.15	0.00	0.04	0.00	0.00	0.00	0.45	0.34	0.00	0.00	0.27	0.53
Crit Moves:	****						****					****
Green/Cycle:	0.13	0.00	0.13	0.00	0.00	0.00	0.36	0.78	0.00	0.00	0.42	0.42
Volume/Cap:	1.18	0.00	0.35	0.00	0.00	0.00	1.27	0.44	0.00	0.00	0.65	1.27
Delay/Veh:	168.8	0.0	49.1	0.0	0.0	0.0	173.8	4.8	0.0	0.0	29.7	169.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	168.8	0.0	49.1	0.0	0.0	0.0	173.8	4.8	0.0	0.0	29.7	169.5
LOS by Move:	F	A	D	A	A	A	F	A	A	A	C	F
HCM2kAvgQ:	18	0	3	0	0	0	50	8	0	0	15	54

Note: Queue reported is the number of cars per lane.

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	621	780	0	1304	253	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.91	1.00		0.86	0.97	0.91
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	5085	1583		6408	3430	1411
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	5085	1583		6408	3430	1411
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	621	780	0	1304	253	68
RTOR Reduction (vph)	0	182	0	0	2	51
Lane Group Flow (vph)	621	598	0	1304	258	10
Confl. Peds. (#/hr)						5
Heavy Vehicles (%)	2%	2%	0%	2%	2%	2%
Turn Type		Perm				Perm
Protected Phases	2			6	8	
Permitted Phases		2				8
Actuated Green, G (s)	92.0	92.0		92.0	20.0	20.0
Effective Green, g (s)	92.0	92.0		92.0	20.0	20.0
Actuated g/C Ratio	0.77	0.77		0.77	0.17	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	3899	1214		4913	572	235
v/s Ratio Prot	0.12			0.20	c0.08	
v/s Ratio Perm		c0.38				0.01
v/c Ratio	0.16	0.49		0.27	0.45	0.04
Uniform Delay, d1	3.7	5.2		4.1	45.1	42.0
Progression Factor	0.32	8.36		0.09	1.00	1.00
Incremental Delay, d2	0.1	1.3		0.1	2.6	0.3
Delay (s)	1.3	45.2		0.5	47.6	42.3
Level of Service	A	D		A	D	D
Approach Delay (s)	25.7			0.5	46.6	
Approach LOS	C			A	D	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.377
Loss Time (sec): 12 Average Delay (sec/veh): 16.8
Optimal Cycle: OPTIMIZED Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	68	0	134	208	481	0	0	1170	111
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	68	0	134	208	481	0	0	1170	111
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	72	0	141	219	506	0	0	1232	117
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	72	0	141	219	506	0	0	1232	117
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	72	0	141	219	506	0	0	1232	117
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.04	0.00	0.05	0.06	0.14	0.00	0.00	0.24	0.07
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.17	0.00	0.32	0.15	0.73	0.00	0.00	0.58	0.58
Volume/Cap:	0.00	0.00	0.00	0.24	0.00	0.16	0.41	0.19	0.00	0.00	0.41	0.12
Delay/Veh:	0.0	0.0	0.0	43.8	0.0	29.3	46.4	5.0	0.0	0.0	13.9	11.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	43.8	0.0	29.3	46.4	5.0	0.0	0.0	13.9	11.4
LOS by Move:	A	A	A	D	A	C	D	A	A	A	B	B
HCM2kAvgQ:	0	0	0	2	0	2	4	3	0	0	9	2

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.203
Loss Time (sec):	16	Average Delay (sec/veh):	104.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	574	858	242	233	138	88	39	378	132	60	619	621
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	574	858	242	233	138	88	39	378	132	60	619	621
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	604	903	255	245	145	93	41	398	139	63	652	654
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	604	903	255	245	145	93	41	398	139	63	652	654
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	604	903	255	245	145	93	41	398	139	63	652	654
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.89	0.89	0.95	1.00	0.85	0.95	0.84	0.84
Lanes:	2.00	1.00	1.00	1.00	1.22	0.78	1.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	2076	1324	1805	1900	1615	1805	3199	1599
Capacity Analysis Module:												
Vol/Sat:	0.17	0.48	0.16	0.14	0.07	0.07	0.02	0.21	0.09	0.03	0.20	0.41
Crit Moves:		****		****			****					****
Green/Cycle:	0.24	0.37	0.37	0.10	0.23	0.23	0.08	0.28	0.28	0.11	0.31	0.31
Volume/Cap:	0.72	1.30	0.43	1.30	0.30	0.30	0.27	0.74	0.30	0.31	0.65	1.30
Delay/Veh:	45.1	184	29.2	222.8	38.4	38.4	52.6	44.2	34.0	49.8	36.2	184.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	45.1	184	29.2	222.8	38.4	38.4	52.6	44.2	34.0	49.8	36.2	184.4
LOS by Move:	D	F	C	F	D	D	D	D	C	D	D	F
HCM2kAvgQ:	12	60	7	18	4	4	1	13	4	2	12	48

Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	39	378	132	60	619	621	574	858	242	233	138	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16	12	12	16	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00	1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1553	1770	5085	1771	3433	3539	1794	3433	3312	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1553	1770	5085	1771	3433	3539	1794	3433	3312	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	378	132	60	619	621	574	858	242	233	138	88
RTOR Reduction (vph)	0	0	106	0	0	51	0	0	134	0	56	0
Lane Group Flow (vph)	39	378	26	60	619	570	574	858	108	233	170	0
Confl. Peds. (#/hr)			5			5						5
Turn Type	Prot		Perm	Prot		pm+ov	Prot		Perm	Prot		
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	3.6	23.9	23.9	8.2	28.5	46.9	28.5	53.5	53.5	18.4	43.4	
Effective Green, g (s)	3.6	23.9	23.9	8.2	28.5	46.9	28.5	53.5	53.5	18.4	43.4	
Actuated g/C Ratio	0.03	0.20	0.20	0.07	0.24	0.39	0.24	0.45	0.45	0.15	0.36	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	53	705	309	121	1208	692	815	1578	800	526	1198	
v/s Ratio Prot	0.02	0.11		c0.03	0.12	c0.13	c0.17	c0.24		0.07	0.05	
v/s Ratio Perm			0.02			0.20			0.06			
v/c Ratio	0.74	0.54	0.09	0.50	0.51	0.82	0.70	0.54	0.13	0.44	0.14	
Uniform Delay, d1	57.7	43.1	39.1	53.9	39.7	32.8	41.9	24.3	19.6	46.1	25.8	
Progression Factor	0.78	0.63	0.27	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	40.6	2.9	0.5	3.2	1.6	7.9	2.8	1.4	0.4	0.6	0.2	
Delay (s)	85.7	29.9	11.2	57.1	41.3	40.7	44.7	25.7	20.0	46.7	26.0	
Level of Service	F	C	B	E	D	D	D	C	B	D	C	
Approach Delay (s)		29.3			41.7			31.4			36.5	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	35.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.282
Loss Time (sec):	12	Average Delay (sec/veh):	13.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	3	0	427	0	0	0	0	331	12	211	447	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	0	427	0	0	0	0	331	12	211	447	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	0	449	0	0	0	0	348	13	222	471	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	0	449	0	0	0	0	348	13	222	471	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	0	449	0	0	0	0	348	13	222	471	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.93	0.07	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3466	126	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.10	0.10	0.12	0.13	0.00
Crit Moves:	****							****		****		
Green/Cycle:	0.99	0.00	0.99	0.00	0.00	0.00	0.00	0.25	0.25	0.17	0.42	0.00
Volume/Cap:	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.40	0.40	0.74	0.31	0.00
Delay/Veh:	0.0	0.0	0.1	0.0	0.0	0.0	0.0	19.1	19.1	33.0	11.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.1	0.0	0.0	0.0	0.0	19.1	19.1	33.0	11.9	0.0
LOS by Move:	A	A	A	A	A	A	A	B	B	C	B	A
HCM2kAvgQ:	0	0	1	0	0	0	0	3	3	4	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 10.3 Worst Case Level Of Service: C[24.6]

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Uncontrolled						Uncontrolled						Stop Sign						Stop Sign					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0		0	0	1!	0	0	
Volume Module:																								
Base Vol:	1	47	2				178	12	24				94	6	1				1	2	254			
Growth Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
Initial Bse:	1	47	2				178	12	24				94	6	1				1	2	254			
User Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
PHF Adj:	0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95			
PHF Volume:	1	49	2				187	13	25				99	6	1				1	2	267			
Reduct Vol:	0	0	0				0	0	0				0	0	0				0	0	0			
FinalVolume:	1	49	2				187	13	25				99	6	1				1	2	267			
Critical Gap Module:																								
Critical Gp:	4.1	xxxx	xxxxx				4.1	xxxx	xxxxx				7.1	6.5	6.2				7.1	6.5	6.2			
FollowUpTim:	2.2	xxxx	xxxxx				2.2	xxxx	xxxxx				3.5	4.0	3.3				3.5	4.0	3.3			
Capacity Module:																								
Cnflict Vol:	38	xxxx	xxxxx				52	xxxx	xxxxx				587	454	25				456	465	51			
Potent Cap.:	1585	xxxx	xxxxx				1567	xxxx	xxxxx				424	505	1057				518	498	1023			
Move Cap.:	1585	xxxx	xxxxx				1567	xxxx	xxxxx				280	437	1057				459	431	1023			
Volume/Cap:	0.00	xxxx	xxxx				0.12	xxxx	xxxx				0.35	0.01	0.00				0.00	0.00	0.26			
Level Of Service Module:																								
2Way95thQ:	0.0	xxxx	xxxxx				0.4	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx			
Control Del:	7.3	xxxx	xxxxx				7.6	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			
LOS by Move:	A	*	*				A	*	*				*	*	*				*	*	*			
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx	288	xxxxx				xxxx	1008	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	1.6	xxxxx				xxxxx	1.1	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	24.6	xxxxx				xxxxx	9.9	xxxxx			
Shared LOS:	*	*	*				*	*	*				*	C	*				*	A	*			
ApproachDel:	xxxxxx						xxxxxx						24.6						9.9					
ApproachLOS:	*						*						C						A					

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Cycle (sec):	95	Critical Vol./Cap.(X):	0.317
Loss Time (sec):	12	Average Delay (sec/veh):	15.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	15	15	10	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	3	364	6	96	325	120	25	4	3	3	3	61
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	364	6	96	325	120	25	4	3	3	3	61
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	3	383	6	101	342	126	26	4	3	3	3	64
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	383	6	101	342	126	26	4	3	3	3	64
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	383	6	101	342	126	26	4	3	3	3	64
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	1.00	0.95	0.96	0.96	0.77	0.94	0.94	0.76	1.00	0.85
Lanes:	1.00	0.98	0.02	1.00	0.73	0.27	1.00	0.57	0.43	1.00	1.00	1.00
Final Sat.:	1805	1865	31	1805	1332	492	1457	1016	762	1450	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.21	0.21	0.06	0.26	0.26	0.02	0.00	0.00	0.00	0.00	0.04
Crit Moves:	****				****		****					
Green/Cycle:	0.11	0.47	0.47	0.24	0.61	0.61	0.16	0.16	0.16	0.16	0.16	0.40
Volume/Cap:	0.02	0.43	0.43	0.23	0.42	0.42	0.11	0.03	0.03	0.01	0.01	0.10
Delay/Veh:	38.1	16.9	16.9	29.1	10.0	10.0	34.5	33.9	33.9	33.8	33.8	17.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.1	16.9	16.9	29.1	10.0	10.0	34.5	33.9	33.9	33.8	33.8	17.8
LOS by Move:	D	B	B	C	A	A	C	C	C	C	C	B
HCM2kAvgQ:	0	7	7	2	7	7	1	0	0	0	0	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #16 St. "A" (NS) / St. "B" (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.291
Loss Time (sec):	8	Average Delay (sec/veh):	10.1
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	8	155	1	95	39	190	148	8	1	1	6	61
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	8	155	1	95	39	190	148	8	1	1	6	61
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	8	163	1	100	41	200	156	8	1	1	6	64
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	8	163	1	100	41	200	156	8	1	1	6	64
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	8	163	1	100	41	200	156	8	1	1	6	64
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.59	1.00	1.00	0.65	0.88	0.88	0.76	0.98	0.98	0.76	1.00	0.85
Lanes:	1.00	0.99	0.01	1.00	0.17	0.83	1.00	0.89	0.11	1.00	1.00	1.00
Final Sat.:	1119	1886	12	1229	283	1381	1452	1660	208	1446	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.09	0.09	0.08	0.14	0.14	0.11	0.01	0.01	0.00	0.00	0.04
Crit Moves:					****		****					
Green/Cycle:	0.50	0.50	0.50	0.50	0.50	0.50	0.37	0.37	0.37	0.37	0.37	0.37
Volume/Cap:	0.02	0.17	0.17	0.16	0.29	0.29	0.29	0.01	0.01	0.00	0.01	0.11
Delay/Veh:	7.6	8.4	8.4	8.4	9.0	9.0	13.7	12.0	12.0	12.0	12.0	12.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	7.6	8.4	8.4	8.4	9.0	9.0	13.7	12.0	12.0	12.0	12.0	12.5
LOS by Move:	A	A	A	A	A	A	B	B	B	B	B	B
HCM2kAvgQ:	0	2	2	1	3	3	2	0	0	0	0	1

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.705
Loss Time (sec):	0	Average Delay (sec/veh):	20.7
Optimal Cycle:	0	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	155	138	179	31	123	2	4	80	257	283	135	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	155	138	179	31	123	2	4	80	257	283	135	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	163	145	188	33	129	2	4	84	271	298	142	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	163	145	188	33	129	2	4	84	271	298	142	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	163	145	188	33	129	2	4	84	271	298	142	21
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.44	0.56	1.00	0.98	0.02	1.00	0.24	0.76	1.00	1.00	1.00
Final Sat.:	442	218	283	392	411	7	432	119	384	425	448	484
Capacity Analysis Module:												
Vol/Sat:	0.37	0.67	0.67	0.08	0.32	0.32	0.01	0.70	0.70	0.70	0.32	0.04
Crit Moves:		****			****				****	****		
Delay/Veh:	14.9	21.7	21.7	12.0	14.0	14.0	10.8	23.5	23.5	27.3	13.9	10.1
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	14.9	21.7	21.7	12.0	14.0	14.0	10.8	23.5	23.5	27.3	13.9	10.1
LOS by Move:	B	C	C	B	B	B	B	C	C	D	B	B
ApproachDel:	19.5			13.6			23.3			22.4		
Delay Adj:	1.00			1.00			1.00			1.00		
ApprAdjDel:	19.5			13.6			23.3			22.4		
LOS by Appr:	C			B			C			C		
AllWayAvgQ:	0.5	1.7	1.7	0.1	0.4	0.4	0.0	1.9	1.9	1.9	0.4	0.0

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Masters Dr. (NS) / California Dr. (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.585
Loss Time (sec):	8	Average Delay (sec/veh):	12.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	0 1	0	1 0	1 0	1
Volume Module:												
Base Vol:	155	138	179	31	123	2	4	80	257	283	135	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	155	138	179	31	123	2	4	80	257	283	135	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	163	145	188	33	129	2	4	84	271	298	142	21
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	163	145	188	33	129	2	4	84	271	298	142	21
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	163	145	188	33	129	2	4	84	271	298	142	21
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.67	0.92	0.92	0.41	1.00	1.00	0.66	0.89	0.89	0.50	1.00	0.85
Lanes:	1.00	0.44	0.56	1.00	0.98	0.02	1.00	0.24	0.76	1.00	1.00	1.00
Final Sat.:	1269	757	982	777	1866	30	1256	400	1284	946	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.13	0.19	0.19	0.04	0.07	0.07	0.00	0.21	0.21	0.31	0.07	0.01
Crit Moves:		****								****		
Green/Cycle:	0.33	0.33	0.33	0.33	0.33	0.33	0.54	0.54	0.54	0.54	0.54	0.54
Volume/Cap:	0.39	0.58	0.58	0.13	0.21	0.21	0.01	0.39	0.39	0.58	0.14	0.02
Delay/Veh:	16.1	18.3	18.3	14.4	14.7	14.7	6.4	8.4	8.4	11.1	7.0	6.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	16.1	18.3	18.3	14.4	14.7	14.7	6.4	8.4	8.4	11.1	7.0	6.5
LOS by Move:	B	B	B	B	B	B	A	A	A	B	A	A
HCM2kAvgQ:	3	6	6	1	2	2	0	4	4	5	1	0

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.091
Loss Time (sec):	0	Average Delay (sec/veh):	55.2
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	0 0	1! 0	0	0 0	1! 0	0
Volume Module:												
Base Vol:	49	449	174	15	464	33	18	7	37	11	13	180
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	449	174	15	464	33	18	7	37	11	13	180
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	52	473	183	16	488	35	19	7	39	12	14	189
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	473	183	16	488	35	19	7	39	12	14	189
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	52	473	183	16	488	35	19	7	39	12	14	189
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	0.72	0.28	1.00	0.93	0.07	0.29	0.11	0.60	0.05	0.06	0.89
Final Sat.:	531	433	168	527	535	38	135	53	278	29	34	474
Capacity Analysis Module:												
Vol/Sat:	0.10	1.09	1.09	0.03	0.91	0.91	0.14	0.14	0.14	0.40	0.40	0.40
Crit Moves:		****			****				****		****	
Delay/Veh:	10.1	87.3	87.3	9.7	43.2	43.2	11.4	11.4	11.4	13.6	13.6	13.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	10.1	87.3	87.3	9.7	43.2	43.2	11.4	11.4	11.4	13.6	13.6	13.6
LOS by Move:	B	F	F	A	E	E	B	B	B	B	B	B
ApproachDel:		81.6			42.2			11.4			13.6	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		81.6			42.2			11.4			13.6	
LOS by Appr:		F			E			B			B	
AllWayAvgQ:	0.1	13.1	13.1	0.0	5.5	5.5	0.1	0.1	0.1	0.6	0.6	0.6

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Masters Dr. (NS) / Bennett Av. (EW)

Cycle (sec): 60 Critical Vol./Cap.(X): 0.566
Loss Time (sec): 8 Average Delay (sec/veh): 9.4
Optimal Cycle: OPTIMIZED Level Of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	0 0	1!	0 0	0 0	1!	0 0
Volume Module:												
Base Vol:	49	449	174	15	464	33	18	7	37	11	13	180
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	49	449	174	15	464	33	18	7	37	11	13	180
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	52	473	183	16	488	35	19	7	39	12	14	189
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	52	473	183	16	488	35	19	7	39	12	14	189
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	52	473	183	16	488	35	19	7	39	12	14	189
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.40	0.96	0.96	0.31	0.99	0.99	0.82	0.82	0.82	0.87	0.87	0.87
Lanes:	1.00	0.72	0.28	1.00	0.93	0.07	0.29	0.11	0.60	0.05	0.06	0.89
Final Sat.:	756	1312	508	585	1756	125	453	176	932	89	105	1456
Capacity Analysis Module:												
Vol/Sat:	0.07	0.36	0.36	0.03	0.28	0.28	0.04	0.04	0.04	0.13	0.13	0.13
Crit Moves:		****									****	
Green/Cycle:	0.62	0.62	0.62	0.62	0.62	0.62	0.25	0.25	0.25	0.25	0.25	0.25
Volume/Cap:	0.11	0.58	0.58	0.04	0.45	0.45	0.17	0.17	0.17	0.52	0.52	0.52
Delay/Veh:	4.8	7.7	7.7	4.6	6.4	6.4	17.8	17.8	17.8	20.6	20.6	20.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	4.8	7.7	7.7	4.6	6.4	6.4	17.8	17.8	17.8	20.6	20.6	20.6
LOS by Move:	A	A	A	A	A	A	B	B	B	C	C	C
HCM2kAvgQ:	0	7	7	0	5	5	1	1	1	4	4	4

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	1.628
Loss Time (sec):	0	Average Delay (sec/veh):	174.7
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0 0 0 0			1 0 0 0 1			1 0 2 0 0			0 0 1 1 0		
Volume Module:												
Base Vol:	0	0	0	388	0	83	125	606	0	0	748	668
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	388	0	83	125	606	0	0	748	668
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	408	0	87	132	638	0	0	787	703
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	408	0	87	132	638	0	0	787	703
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	408	0	87	132	638	0	0	787	703
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.06	0.94
Final Sat.:	0	0	0	407	0	463	392	829	0	0	484	469
Capacity Analysis Module:												
Vol/Sat:	xxxx	xxxx	xxxx	1.00	xxxx	0.19	0.34	0.77	xxxx	xxxx	1.63	1.50
Crit Moves:				****				****			****	
Delay/Veh:	0.0	0.0	0.0	75.6	0.0	12.1	16.5	35.0	0.0	0.0	312	254.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	75.6	0.0	12.1	16.5	35.0	0.0	0.0	312	254.5
LOS by Move:	*	*	*	F	*	B	C	D	*	*	F	F
ApproachDel:	xxxxxx			64.4			31.8			285.1		
Delay Adj:	xxxxx			1.00			1.00			1.00		
ApprAdjDel:	xxxxxx			64.4			31.8			285.1		
LOS by Appr:	*			F			D			F		
AllWayAvgQ:	0.0	0.0	0.0	7.2	0.0	0.2	0.5	2.7	0.0	0.0	38.6	33.8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #3 Masters Dr. (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	95	Critical Vol./Cap.(X):	0.851
Loss Time (sec):	12	Average Delay (sec/veh):	26.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	2	0 0	0 0	1	1 0
Volume Module:												
Base Vol:	0	0	0	388	0	83	125	606	0	0	748	668
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	388	0	83	125	606	0	0	748	668
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	408	0	87	132	638	0	0	787	703
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	408	0	87	132	638	0	0	787	703
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	408	0	87	132	638	0	0	787	703
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	0.95	1.00	1.00	0.88	0.88
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	2.00	0.00	0.00	1.06	0.94
Final Sat.:	0	0	0	1805	0	1615	1805	3610	0	0	1772	1582
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.23	0.00	0.05	0.07	0.18	0.00	0.00	0.44	0.44
Crit Moves:				****			****				****	
Green/Cycle:	0.00	0.00	0.00	0.26	0.00	0.26	0.11	0.61	0.00	0.00	0.51	0.51
Volume/Cap:	0.00	0.00	0.00	0.87	0.00	0.21	0.69	0.29	0.00	0.00	0.87	0.87
Delay/Veh:	0.0	0.0	0.0	50.1	0.0	27.8	51.5	8.6	0.0	0.0	25.9	25.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	50.1	0.0	27.8	51.5	8.6	0.0	0.0	25.9	25.9
LOS by Move:	A	A	A	D	A	C	D	A	A	A	C	C
HCM2kAvgQ:	0	0	0	13	0	2	4	4	0	0	21	21

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #4 Bedford Cyn. Rd. (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.962
Loss Time (sec): 12 Average Delay (sec/veh): 38.2
Optimal Cycle: OPTIMIZED Level Of Service: D

Approach:	North Bound						South Bound						East Bound						West Bound					
Movement:	L	-	T	-	R		L	-	T	-	R		L	-	T	-	R		L	-	T	-	R	
Control:	Split Phase						Split Phase						Permitted						Protected					
Rights:	Include						Include						Include						Include					
Min. Green:	15	0	15				0	0	0				0	15	15				10	15	0			
Y+R:	4.0	4.0	4.0				4.0	4.0	4.0				4.0	4.0	4.0				4.0	4.0	4.0			
Lanes:	1	0	0	0	1		0	0	0	0	0		0	0	1	1	0		1	0	2	0	0	
Volume Module:																								
Base Vol:	219	0	208				0	0	0				0	1676	307				238	823	0			
Growth Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
Initial Bse:	219	0	208				0	0	0				0	1676	307				238	823	0			
User Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
PHF Adj:	0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95				0.95	0.95	0.95			
PHF Volume:	231	0	219				0	0	0				0	1764	323				251	866	0			
Reduct Vol:	0	0	0				0	0	0				0	0	0				0	0	0			
Reduced Vol:	231	0	219				0	0	0				0	1764	323				251	866	0			
PCE Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
MLF Adj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
FinalVolume:	231	0	219				0	0	0				0	1764	323				251	866	0			
Saturation Flow Module:																								
Sat/Lane:	1900	1900	1900				1900	1900	1900				1900	1900	1900				1900	1900	1900			
Adjustment:	0.95	1.00	0.85				1.00	1.00	1.00				1.00	0.93	0.93				0.95	0.95	1.00			
Lanes:	1.00	0.00	1.00				0.00	0.00	0.00				0.00	1.69	0.31				1.00	2.00	0.00			
Final Sat.:	1805	0	1615				0	0	0				0	2981	546				1805	3610	0			
Capacity Analysis Module:																								
Vol/Sat:	0.13	0.00	0.14				0.00	0.00	0.00				0.00	0.59	0.59				0.14	0.24	0.00			
Crit Moves:			****											****					****					
Green/Cycle:	0.14	0.00	0.14				0.00	0.00	0.00				0.00	0.61	0.61				0.14	0.76	0.00			
Volume/Cap:	0.91	0.00	0.96				0.00	0.00	0.00				0.00	0.96	0.96				0.96	0.32	0.00			
Delay/Veh:	83.5	0.0	100.1				0.0	0.0	0.0				0.0	33.6	33.6				96.3	4.6	0.0			
User DelAdj:	1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00				1.00	1.00	1.00			
AdjDel/Veh:	83.5	0.0	100.1				0.0	0.0	0.0				0.0	33.6	33.6				96.3	4.6	0.0			
LOS by Move:	F		A		F		A		A		A		A	C		C			F	A		A		
HCM2kAvgQ:	12		0		12		0		0		0		0	44		44			11	5		0		

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Base Volume Alternative)

Intersection #5 Bedford Cyn. Rd. (NS) / Georgetown Dr. (EW)

Cycle (sec):	0	Critical Vol./Cap.(X):	0.676
Loss Time (sec):	0	Average Delay (sec/veh):	14.6
Optimal Cycle:	0	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Ignore			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 0	1	0	1 0	0 1	0	1 0	0 1	0	0 1!	0 0
Volume Module:												
Base Vol:	57	293	11	8	436	101	56	1	35	2	2	6
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	57	293	11	8	436	101	56	1	35	2	2	6
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	60	308	12	8	459	106	59	1	0	2	2	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	60	308	12	8	459	106	59	1	0	2	2	6
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	60	308	12	8	459	106	59	1	0	2	2	6
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	0.02	0.98	1.00	0.98	0.02	1.00	0.20	0.20	0.60
Final Sat.:	546	601	667	12	679	794	459	8	550	101	101	303
Capacity Analysis Module:												
Vol/Sat:	0.11	0.51	0.02	0.68	0.68	0.13	0.13	0.13	0.00	0.02	0.02	0.02
Crit Moves:		****			****			****			****	
Delay/Veh:	9.9	14.4	8.0	17.6	17.6	7.8	10.8	10.8	0.0	9.5	9.5	9.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	9.9	14.4	8.0	17.6	17.6	7.8	10.8	10.8	0.0	9.5	9.5	9.5
LOS by Move:	A	B	A	C	C	A	B	B	*	A	A	A
ApproachDel:		13.5			15.8			10.8			9.5	
Delay Adj:		1.00			1.00			1.00			1.00	
ApprAdjDel:		13.5			15.8			10.8			9.5	
LOS by Appr:		B			C			B			A	
AllWayAvgQ:	0.1	1.0	0.0	1.9	1.9	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Note: Queue reported is the number of cars per lane.

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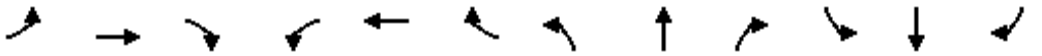

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	777	116	789	1103	145	104	142	852	392	129	209
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	4972		3433	3539	1541	1770	1863	2755	3433	1863	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	4972		3433	3539	1541	1770	1863	2755	3433	1863	1557
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	777	116	789	1103	145	104	142	852	392	129	209
RTOR Reduction (vph)	0	16	0	0	0	68	0	0	10	0	0	61
Lane Group Flow (vph)	101	877	0	789	1103	77	104	142	842	392	129	148
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot			Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2		1	6	7	3	8	1	7	4	5
Permitted Phases						6			8			4
Actuated Green, G (s)	10.0	27.3		29.0	46.3	61.3	13.6	32.7	61.7	15.0	34.1	44.1
Effective Green, g (s)	10.0	27.3		29.0	46.3	61.3	13.6	32.7	61.7	15.0	34.1	44.1
Actuated g/C Ratio	0.08	0.23		0.24	0.39	0.51	0.11	0.27	0.51	0.12	0.28	0.37
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	148	1131		830	1365	839	201	508	1508	429	529	624
v/s Ratio Prot	0.06	0.18		c0.23	c0.31	0.01	0.06	0.08	c0.13	c0.11	0.07	0.02
v/s Ratio Perm						0.04			0.17			0.08
v/c Ratio	0.68	0.78		0.95	0.81	0.09	0.52	0.28	0.56	0.91	0.24	0.24
Uniform Delay, d1	53.5	43.5		44.8	32.9	15.1	50.1	34.4	19.9	51.9	33.0	26.3
Progression Factor	0.92	0.85		0.88	0.71	0.51	1.04	0.93	0.86	1.00	1.00	1.00
Incremental Delay, d2	9.6	4.1		16.1	3.8	0.2	9.1	1.3	0.4	26.4	1.1	0.2
Delay (s)	58.7	41.1		55.4	27.2	7.8	61.4	33.3	17.5	78.3	34.1	26.5
Level of Service	E	D		E	C	A	E	C	B	E	C	C
Approach Delay (s)		42.9			36.7			23.7			55.7	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		

Description: Intersection Improvements
- Add 3rd Westbound Left Turn Lane

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.042
Loss Time (sec):	12	Average Delay (sec/veh):	76.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0	1 0	0 1	0	0 1	0	1 0	2 0	0
Volume Module:												
Base Vol:	0	0	0	114	0	492	0	1031	853	47	569	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	114	0	492	0	1031	853	47	569	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	120	0	518	0	1085	898	49	599	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	120	0	518	0	1085	898	49	599	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	120	0	518	0	1085	898	49	599	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	1.00	0.89	0.89	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.09	0.91	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	1615	0	1841	1523	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.07	0.00	0.32	0.00	0.59	0.59	0.03	0.17	0.00
Crit Moves:						****		****		****		
Green/Cycle:	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.53	0.53	0.08	0.61	0.00
Volume/Cap:	0.00	0.00	0.00	0.23	0.00	1.11	0.00	1.11	1.11	0.33	0.27	0.00
Delay/Veh:	0.0	0.0	0.0	32.8	0.0	119.4	0.0	88.2	88.2	53.1	10.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.8	0.0	119.4	0.0	88.2	88.2	53.1	10.9	0.0
LOS by Move:	A	A	A	C	A	F	A	F	F	D	B	A
HCM2kAvgQ:	0	0	0	3	0	29	0	49	49	2	5	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #7 I-15 SB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.851
Loss Time (sec): 12 Average Delay (sec/veh): 26.7
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	0 1	0	0 2	0 0	2	0 1	1 0	2	0 0
Volume Module:												
Base Vol:	0	0	0	114	0	492	0	1031	853	47	569	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	114	0	492	0	1031	853	47	569	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	120	0	518	0	1085	898	49	599	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	120	0	518	0	1085	898	49	599	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	120	0	518	0	1085	898	49	599	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	1.00	0.95	0.85	0.95	0.95	1.00
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	0.00	2.00	1.00	1.00	2.00	0.00
Final Sat.:	0	0	0	1809	0	2842	0	3610	1615	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.07	0.00	0.18	0.00	0.30	0.56	0.03	0.17	0.00
Crit Moves:						****			****	****		
Green/Cycle:	0.00	0.00	0.00	0.20	0.00	0.20	0.00	0.62	0.62	0.08	0.70	0.00
Volume/Cap:	0.00	0.00	0.00	0.33	0.00	0.90	0.00	0.49	0.90	0.33	0.24	0.00
Delay/Veh:	0.0	0.0	0.0	41.5	0.0	64.5	0.0	12.9	31.4	53.1	6.6	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	41.5	0.0	64.5	0.0	12.9	31.4	53.1	6.6	0.0
LOS by Move:	A	A	A	D	A	E	A	B	C	D	A	A
HCM2kAvgQ:	0	0	0	4	0	14	0	11	29	2	4	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #8 I-15 SB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.737
Loss Time (sec):	12	Average Delay (sec/veh):	286.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	15	0	15	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 1	1 0	1	0 0	0 0	1	0 1
Volume Module:												
Base Vol:	0	0	0	638	0	936	588	1433	0	0	1101	187
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	638	0	936	588	1433	0	0	1101	187
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	672	0	985	619	1508	0	0	1159	197
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	672	0	985	619	1508	0	0	1159	197
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	672	0	985	619	1508	0	0	1159	197
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.85	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	0	0	0	1805	0	1615	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.37	0.00	0.61	0.34	0.79	0.00	0.00	0.61	0.12
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.35	0.00	0.35	0.20	0.55	0.00	0.00	0.35	0.35
Volume/Cap:	0.00	0.00	0.00	1.06	0.00	1.74	1.74	1.45	0.00	0.00	1.74	0.35
Delay/Veh:	0.0	0.0	0.0	91.3	0.0	377.7	391.0	234	0.0	0.0	377	29.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	91.3	0.0	377.7	391.0	234	0.0	0.0	377	29.1
LOS by Move:	A	A	A	F	A	F	F	F	A	A	F	C
HCM2kAvgQ:	0	0	0	34	0	87	54	111	0	0	100	5

Note: Queue reported is the number of cars per lane.

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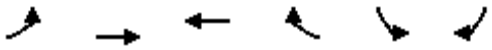

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑	↱	↰↰	↱↱
Volume (vph)	0	2021	1101	187	638	936
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.91	0.95	1.00	0.97	0.88
Frpb, ped/bikes		1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		5085	3539	1583	3433	2743
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		5085	3539	1583	3433	2743
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2021	1101	187	638	936
RTOR Reduction (vph)	0	0	0	90	0	65
Lane Group Flow (vph)	0	2021	1101	97	638	871
Confl. Peds. (#/hr)						5
Turn Type				Perm		Perm
Protected Phases		2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)		62.0	62.0	62.0	50.0	50.0
Effective Green, g (s)		62.0	62.0	62.0	50.0	50.0
Actuated g/C Ratio		0.52	0.52	0.52	0.42	0.42
Clearance Time (s)		4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2627	1828	818	1430	1143
v/s Ratio Prot		c0.40	0.31		0.19	
v/s Ratio Perm				0.06		c0.32
v/c Ratio		0.77	0.60	0.12	0.45	0.76
Uniform Delay, d1		23.3	20.3	14.9	25.1	29.9
Progression Factor		0.58	0.65	1.07	1.00	1.00
Incremental Delay, d2		1.5	1.4	0.3	1.0	4.8
Delay (s)		15.0	14.7	16.3	26.1	34.7
Level of Service		B	B	B	C	C
Approach Delay (s)		15.0	14.9		31.2	
Approach LOS		B	B		C	

Intersection Summary			
HCM Average Control Delay	20.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #9 I-15 NB Ramps (NS) / El Cerrito Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.746
Loss Time (sec): 12 Average Delay (sec/veh): 34.1
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0	0	1! 0	0	0	0	2	0	1	0	0	0	0	1	1	0
Volume Module:												
Base Vol:	414	0	110	0	0	0	493	652	0	0	202	85
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	414	0	110	0	0	0	493	652	0	0	202	85
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	436	0	116	0	0	0	519	686	0	0	213	89
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	436	0	116	0	0	0	519	686	0	0	213	89
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	436	0	116	0	0	0	519	686	0	0	213	89
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	1.00	0.94	1.00	1.00	1.00	0.92	1.00	1.00	1.00	0.91	0.91
Lanes:	0.79	0.00	0.21	0.00	0.00	0.00	2.00	1.00	0.00	0.00	1.41	0.59
Final Sat.:	1404	0	373	0	0	0	3502	1900	0	0	2429	1022
Capacity Analysis Module:												
Vol/Sat:	0.31	0.00	0.31	0.00	0.00	0.00	0.15	0.36	0.00	0.00	0.09	0.09
Crit Moves:	****							****				
Green/Cycle:	0.36	0.00	0.36	0.00	0.00	0.00	0.42	0.54	0.00	0.00	0.13	0.13
Volume/Cap:	0.86	0.00	0.86	0.00	0.00	0.00	0.36	0.67	0.00	0.00	0.70	0.70
Delay/Veh:	47.4	0.0	47.4	0.0	0.0	0.0	24.2	21.6	0.0	0.0	55.4	55.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.4	0.0	47.4	0.0	0.0	0.0	24.2	21.6	0.0	0.0	55.4	55.4
LOS by Move:	D	A	D	A	A	A	C	C	A	A	E	E
HCM2kAvgQ:	22	0	22	0	0	0	6	17	0	0	7	7

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #10 I-15 NB Ramps (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.360
Loss Time (sec):	12	Average Delay (sec/veh):	140.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	0	15	0	0	0	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0	0	0 0 0	1	0 1	0 0	0	0 1	0 1
Volume Module:												
Base Vol:	558	0	271	0	0	0	849	1222	0	0	730	449
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	558	0	271	0	0	0	849	1222	0	0	730	449
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	587	0	285	0	0	0	894	1286	0	0	768	473
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	587	0	285	0	0	0	894	1286	0	0	768	473
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	587	0	285	0	0	0	894	1286	0	0	768	473
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.85
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00
Final Sat.:	1809	0	1615	0	0	0	1805	1900	0	0	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.32	0.00	0.18	0.00	0.00	0.00	0.50	0.68	0.00	0.00	0.40	0.29
Crit Moves:	****						****				****	
Green/Cycle:	0.24	0.00	0.24	0.00	0.00	0.00	0.36	0.66	0.00	0.00	0.30	0.30
Volume/Cap:	1.36	0.00	0.74	0.00	0.00	0.00	1.36	1.02	0.00	0.00	1.36	0.98
Delay/Veh:	222.3	0.0	49.7	0.0	0.0	0.0	210.0	51.9	0.0	0.0	216	78.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	222.3	0.0	49.7	0.0	0.0	0.0	210.0	51.9	0.0	0.0	216	78.8
LOS by Move:	F	A	D	A	A	A	F	D	A	A	F	E
HCM2kAvgQ:	42	0	11	0	0	0	60	49	0	0	53	20

Note: Queue reported is the number of cars per lane.

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1222	849	0	1179	558	271
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.91	1.00		0.86	0.97	0.91
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.85		1.00	0.99	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	5085	1583		6408	3423	1416
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	5085	1583		6408	3423	1416
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1222	849	0	1179	558	271
RTOR Reduction (vph)	0	297	0	0	3	65
Lane Group Flow (vph)	1222	552	0	1179	582	180
Confl. Peds. (#/hr)						5
Heavy Vehicles (%)	2%	2%	0%	2%	2%	2%
Turn Type		Perm				Perm
Protected Phases	2			6	8	
Permitted Phases		2				8
Actuated Green, G (s)	78.0	78.0		78.0	34.0	34.0
Effective Green, g (s)	78.0	78.0		78.0	34.0	34.0
Actuated g/C Ratio	0.65	0.65		0.65	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	3305	1029		4165	970	401
v/s Ratio Prot	0.24			0.18	c0.17	
v/s Ratio Perm		c0.35				0.13
v/c Ratio	0.37	0.54		0.28	0.60	0.45
Uniform Delay, d1	9.7	11.3		9.0	37.1	35.3
Progression Factor	0.30	3.09		0.43	1.00	1.00
Incremental Delay, d2	0.2	1.4		0.2	2.7	3.6
Delay (s)	3.1	36.3		4.1	39.9	38.9
Level of Service	A	D		A	D	D
Approach Delay (s)	16.7			4.1	39.6	
Approach LOS	B			A	D	

Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #11 Grand Oaks (NS) / Cajalco Rd. (EW)

Cycle (sec): 120 Critical Vol./Cap.(X): 0.615
Loss Time (sec): 12 Average Delay (sec/veh): 27.3
Optimal Cycle: OPTIMIZED Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Permitted		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	20	0	20	10	15	0	0	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	0	0 0	1 0	0	0 2	2 0	2	0 0	0 0	3	0 1
Volume Module:												
Base Vol:	0	0	0	363	0	595	682	762	0	0	632	155
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	0	0	363	0	595	682	762	0	0	632	155
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	0	0	382	0	626	718	802	0	0	665	163
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	382	0	626	718	802	0	0	665	163
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	0	0	0	382	0	626	718	802	0	0	665	163
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	1.00	0.95	1.00	0.75	0.92	0.95	1.00	1.00	0.91	0.85
Lanes:	0.00	0.00	0.00	1.00	0.00	2.00	2.00	2.00	0.00	0.00	3.00	1.00
Final Sat.:	0	0	0	1805	0	2842	3502	3610	0	0	5187	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.21	0.00	0.22	0.21	0.22	0.00	0.00	0.13	0.10
Crit Moves:						****	****				****	
Green/Cycle:	0.00	0.00	0.00	0.36	0.00	0.69	0.33	0.54	0.00	0.00	0.21	0.21
Volume/Cap:	0.00	0.00	0.00	0.59	0.00	0.32	0.62	0.41	0.00	0.00	0.62	0.48
Delay/Veh:	0.0	0.0	0.0	32.8	0.0	7.4	34.5	16.3	0.0	0.0	44.2	42.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	0.0	0.0	32.8	0.0	7.4	34.5	16.3	0.0	0.0	44.2	42.9
LOS by Move:	A	A	A	C	A	A	C	B	A	A	D	D
HCM2kAvgQ:	0	0	0	12	0	5	10	8	0	0	8	5

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
with Existing Geometry

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #12 Temescal Cyn. Rd (NS) / Cajalco Rd. (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	1.382
Loss Time (sec):	16	Average Delay (sec/veh):	149.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	20	20	10	20	20	10	20	20	10	20	20
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1 0	1	1 0	1 1	0	1 0	1 0	1	1 0	2 1	0
Volume Module:												
Base Vol:	249	675	49	599	520	81	144	731	348	119	361	461
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	249	675	49	599	520	81	144	731	348	119	361	461
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	262	711	52	631	547	85	152	769	366	125	380	485
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	262	711	52	631	547	85	152	769	366	125	380	485
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	262	711	52	631	547	85	152	769	366	125	380	485
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	0.93	0.93	0.95	1.00	0.85	0.95	0.83	0.83
Lanes:	2.00	1.00	1.00	1.00	1.73	0.27	1.00	1.00	1.00	1.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	3061	477	1805	1900	1615	1805	3168	1584
Capacity Analysis Module:												
Vol/Sat:	0.07	0.37	0.03	0.35	0.18	0.18	0.08	0.40	0.23	0.07	0.12	0.31
Crit Moves:		****		****				****		****		
Green/Cycle:	0.16	0.26	0.26	0.24	0.34	0.34	0.08	0.28	0.28	0.08	0.29	0.29
Volume/Cap:	0.47	1.44	0.12	1.44	0.52	0.52	1.07	1.44	0.81	0.83	0.42	1.07
Delay/Veh:	46.4	254	34.1	256.2	32.0	32.0	151.2	252	50.3	85.1	34.9	95.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	46.4	254	34.1	256.2	32.0	32.0	151.2	252	50.3	85.1	34.9	95.3
LOS by Move:	D	F	C	F	C	C	F	F	D	F	C	F
HCM2kAvgQ:	5	54	1	48	10	10	8	57	13	7	6	28

Note: Queue reported is the number of cars per lane.

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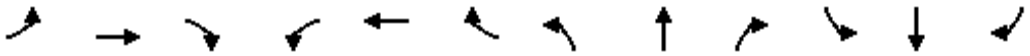

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	144	731	348	119	361	461	249	675	49	599	520	81
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	16	12	12	16	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1555	1770	5085	1774	3433	3539	1794	3433	3460	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1555	1770	5085	1774	3433	3539	1794	3433	3460	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	144	731	348	119	361	461	249	675	49	599	520	81
RTOR Reduction (vph)	0	0	244	0	0	44	0	0	36	0	10	0
Lane Group Flow (vph)	144	731	104	119	361	417	249	675	13	599	591	0
Confl. Peds. (#/hr)			5			5						5
Turn Type	Prot		Perm	Prot		pm+ov	Prot		Perm	Prot		
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	12.7	31.5	31.5	12.2	31.0	58.3	14.4	33.0	33.0	27.3	45.9	
Effective Green, g (s)	12.7	31.5	31.5	12.2	31.0	58.3	14.4	33.0	33.0	27.3	45.9	
Actuated g/C Ratio	0.11	0.26	0.26	0.10	0.26	0.49	0.12	0.28	0.28	0.23	0.38	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	187	929	408	180	1314	862	412	973	493	781	1323	
v/s Ratio Prot	c0.08	c0.21		0.07	0.07	0.11	0.07	c0.19		c0.17	0.17	
v/s Ratio Perm			0.07			0.12			0.01			
v/c Ratio	0.77	0.79	0.25	0.66	0.27	0.48	0.60	0.69	0.03	0.77	0.45	
Uniform Delay, d1	52.2	41.1	35.0	51.9	35.5	20.7	50.1	39.0	31.8	43.4	27.6	
Progression Factor	0.83	0.70	0.42	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	16.5	6.3	1.4	8.8	0.5	0.4	2.5	4.1	0.1	4.5	1.1	
Delay (s)	60.0	34.9	16.2	60.7	36.0	21.2	52.6	43.0	31.9	47.9	28.7	
Level of Service	E	C	B	E	D	C	D	D	C	D	C	
Approach Delay (s)		32.5			31.9			44.9			38.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	36.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #13 St. "C" (NS) / Eagle Glen Pkwy. (EW)

Cycle (sec):	105	Critical Vol./Cap.(X):	0.624
Loss Time (sec):	12	Average Delay (sec/veh):	27.7
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Permitted			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	20	0	20	0	0	0	0	15	15	10	15	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	0 1	0 0	0	0 0	0 0	1	1 0	1 0	2	0 0
Volume Module:												
Base Vol:	12	0	294	0	0	0	0	437	4	398	433	0
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	12	0	294	0	0	0	0	437	4	398	433	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	13	0	309	0	0	0	0	460	4	419	456	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	13	0	309	0	0	0	0	460	4	419	456	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	13	0	309	0	0	0	0	460	4	419	456	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	1.00	0.85	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00
Lanes:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.98	0.02	1.00	2.00	0.00
Final Sat.:	1805	0	1615	0	0	0	0	3574	33	1805	3610	0
Capacity Analysis Module:												
Vol/Sat:	0.01	0.00	0.19	0.00	0.00	0.00	0.00	0.13	0.13	0.23	0.13	0.00
Crit Moves:			****					****		****		
Green/Cycle:	0.31	0.00	0.31	0.00	0.00	0.00	0.00	0.21	0.21	0.37	0.58	0.00
Volume/Cap:	0.02	0.00	0.62	0.00	0.00	0.00	0.00	0.62	0.62	0.62	0.22	0.00
Delay/Veh:	25.4	0.0	33.7	0.0	0.0	0.0	0.0	39.6	39.6	28.8	10.7	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.4	0.0	33.7	0.0	0.0	0.0	0.0	39.6	39.6	28.8	10.7	0.0
LOS by Move:	C	A	C	A	A	A	A	D	D	C	B	A
HCM2kAvgQ:	0	0	9	0	0	0	0	8	8	10	3	0

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #14 St. "C" (NS) / St. "B" (EW)

Average Delay (sec/veh): 9.3 Worst Case Level Of Service: D[27.4]

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 0 1! 0 0			0 0 1! 0 0			0 0 1! 0 0		
Volume Module:												
Base Vol:	0	24	5	245	45	84	44	18	1	9	28	223
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	24	5	245	45	84	44	18	1	9	28	223
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	25	5	258	47	88	46	19	1	9	29	235
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	25	5	258	47	88	46	19	1	9	29	235
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	7.1	6.5	6.2	7.1	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	3.5	4.0	3.3	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	31	xxxx	xxxxx	767	638	92	645	679	28
Potent Cap.:	xxxx	xxxx	xxxxx	1595	xxxx	xxxxx	321	397	971	388	376	1053
Move Cap.:	xxxx	xxxx	xxxxx	1595	xxxx	xxxxx	198	322	971	317	305	1053
Volume/Cap:	xxxx	xxxx	xxxx	0.16	xxxx	xxxx	0.23	0.06	0.00	0.03	0.10	0.22
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.6	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.7	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT	LT	LTR	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	226	xxxxx	xxxx	783	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	1.2	xxxxx	xxxxx	1.6	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	27.4	xxxxx	xxxxx	12.0	xxxxx
Shared LOS:	*	*	*	*	*	*	*	D	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			27.4			12.0		
ApproachLOS:	*			*			D			B		

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #15 St. "A" (NS) / Dwy. 1 (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.756
Loss Time (sec):	12	Average Delay (sec/veh):	26.4
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Permitted			Permitted		
Rights:	Include			Include			Include			Ovl		
Min. Green:	10	15	15	10	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	11	633	24	350	644	40	115	19	10	31	18	352
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	11	633	24	350	644	40	115	19	10	31	18	352
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	12	666	25	368	678	42	121	20	11	33	19	371
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	12	666	25	368	678	42	121	20	11	33	19	371
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	12	666	25	368	678	42	121	20	11	33	19	371
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.99	0.99	0.95	0.99	0.99	0.75	0.95	0.95	0.74	1.00	0.85
Lanes:	1.00	0.96	0.04	1.00	0.94	0.06	1.00	0.66	0.34	1.00	1.00	1.00
Final Sat.:	1805	1820	69	1805	1773	110	1431	1180	621	1412	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.37	0.37	0.20	0.38	0.38	0.08	0.02	0.02	0.02	0.01	0.23
Crit Moves:		****			****			****				
Green/Cycle:	0.16	0.45	0.45	0.25	0.54	0.54	0.17	0.17	0.17	0.17	0.17	0.42
Volume/Cap:	0.04	0.81	0.81	0.81	0.70	0.70	0.51	0.10	0.10	0.14	0.06	0.55
Delay/Veh:	32.2	27.6	27.6	42.6	17.5	17.5	35.9	31.9	31.9	32.3	31.6	20.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.2	27.6	27.6	42.6	17.5	17.5	35.9	31.9	31.9	32.3	31.6	20.8
LOS by Move:	C	C	C	D	B	B	D	C	C	C	C	C
HCM2kAvgQ:	0	17	17	10	15	15	4	1	1	1	0	8

Note: Queue reported is the number of cars per lane.

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Arantine Hills Specific Plan (JN: 06694)
2035 With Project Conditions
With Improvements

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #16 St. "A" (NS) / St. "B" (EW)

Cycle (sec):	60	Critical Vol./Cap.(X):	0.583
Loss Time (sec):	8	Average Delay (sec/veh):	12.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Permitted			Permitted		
Rights:	Include			Include			Include			Include		
Min. Green:	15	15	15	15	15	15	15	15	15	15	15	15
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0	0	1 0	1 0	0	1 0	1 0	0	1 0	1 0	1 0	1
Volume Module:												
Base Vol:	10	73	6	350	138	156	208	37	19	11	54	352
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	10	73	6	350	138	156	208	37	19	11	54	352
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	11	77	6	368	145	164	219	39	20	12	57	371
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	11	77	6	368	145	164	219	39	20	12	57	371
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	11	77	6	368	145	164	219	39	20	12	57	371
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.52	0.99	0.99	0.70	0.92	0.92	0.72	0.95	0.95	0.72	1.00	0.85
Lanes:	1.00	0.92	0.08	1.00	0.47	0.53	1.00	0.66	0.34	1.00	1.00	1.00
Final Sat.:	980	1736	143	1334	820	928	1372	1191	612	1368	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.01	0.04	0.04	0.28	0.18	0.18	0.16	0.03	0.03	0.01	0.03	0.23
Crit Moves:				****								****
Green/Cycle:	0.47	0.47	0.47	0.47	0.47	0.47	0.39	0.39	0.39	0.39	0.39	0.39
Volume/Cap:	0.02	0.09	0.09	0.58	0.37	0.37	0.41	0.08	0.08	0.02	0.08	0.58
Delay/Veh:	8.4	8.7	8.7	12.9	10.4	10.4	13.6	11.5	11.5	11.2	11.4	15.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	8.4	8.7	8.7	12.9	10.4	10.4	13.6	11.5	11.5	11.2	11.4	15.7
LOS by Move:	A	A	A	B	B	B	B	B	B	B	B	B
HCM2kAvgQ:	0	1	1	5	3	3	3	1	1	0	1	6

Note: Queue reported is the number of cars per lane.

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APPENDIX 5.8

2014 Without Project Conditions
Ramp Merge and Diverge Analysis Worksheets

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroad, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 378 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6438	0.92	Level	11	0	0.948	1.00	7383
Ramp	336	0.92	Level	11	0	0.948	1.00	385
UpStream								
DownStream	378	0.92	Level	11	0	0.948	1.00	433

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.558 using Equation (Exhibit 25-12)
V_{12} = 4288 pc/h
V_3 or V_{av34} 3095 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4683 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7383	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	6998	Exhibit 25-14	7050	No
V_R	385	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4288	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 31.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.463 (Exhibit 25-19)
S_R= 54.4 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.7 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 677 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6940	0.92	Level	11	0	0.948	1.00	7958
Ramp	438	0.92	Level	11	0	0.948	1.00	502
UpStream								
DownStream	677	0.92	Level	11	0	0.948	1.00	776

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.538 using Equation (Exhibit 25-12)
V_{12} = 4513 pc/h
V_3 or V_{av34} 3445 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5258 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7958	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7456	Exhibit 25-14	7050	Yes
V_R	502	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4513	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 36.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.473 (Exhibit 25-19)
S_R= 54.1 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.3 mph (Exhibit 25-15)

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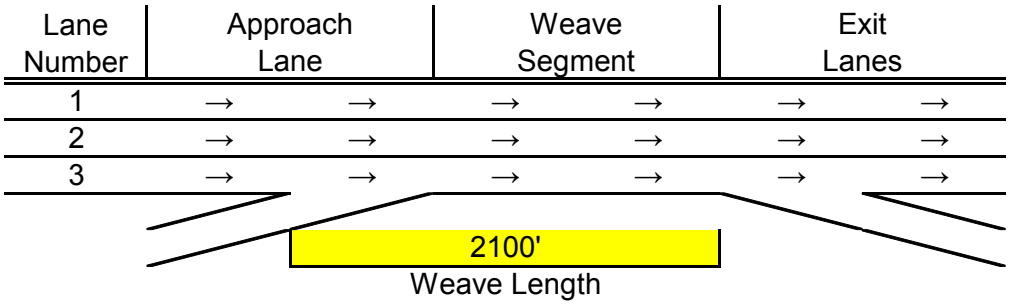
Weave Configuration

Roadway	I-15 Freeway Southbound
Segment:	El Cerritos Road ~ Cajalco Road
Description:	2014 Without Project

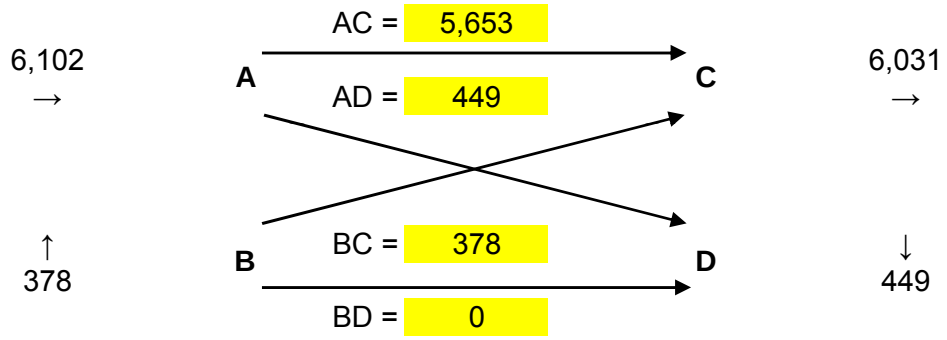


Number of Lane Change by Weaving Movements:

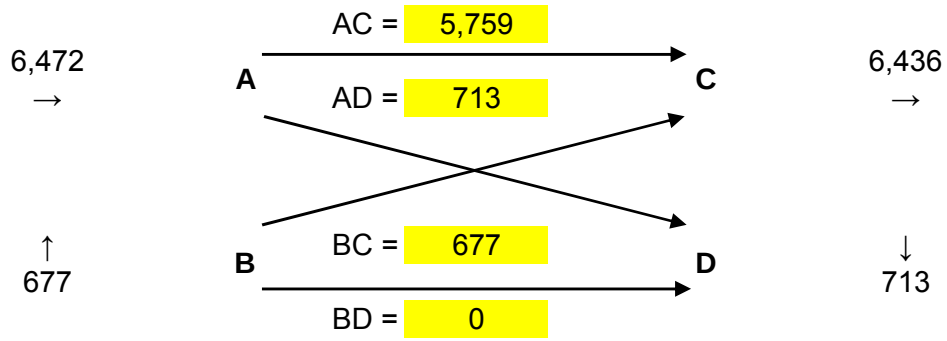
V_{w1}= 0 V_{w2}= 0

Per HCM Exhibit 24-5, Weave Configuration Type = **B**

2014 Without Project AM Peak Hour Traffic



2014 Without Project PM Peak Hour Traffic



FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/21/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2014 Without Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.13
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.46
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5653	0.92	11	0	1.5	1.2	0.948	1.00	6482
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	449	0.92	11	0	1.5	1.2	0.948	1.00	514
V_{w2}	378	0.92	11	0	1.5	1.2	0.948	1.00	433
V_w				947	V_{nw}				6482
V									7429

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.54	0.22		
Weaving and non-weaving speeds, Si (mi/h)	50.72	60.01		

Number of lanes required for unconstrained operation, Nw 0.36
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	58.64
Weaving segment density, D (pc/mi/ln)	42.23
Level of service, LOS	E
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/16/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2014 Without Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.19
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.49
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5789	0.92	11	0	1.5	1.2	0.948	1.00	6638
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	713	0.92	11	0	1.5	1.2	0.948	1.00	817
V_{w2}	677	0.92	11	0	1.5	1.2	0.948	1.00	776
V_w				1593	V_{nw}				6638
V									8231

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.66	0.35		
Weaving and non-weaving speeds, Si (mi/h)	48.18	55.86		

Number of lanes required for unconstrained operation, Nw 0.58
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	54.19
Weaving segment density, D (pc/mi/ln)	50.63
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 449 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6031	0.92	Level	11	0	0.948	1.00	6916
Ramp	197	0.92	Level	11	0	0.948	1.00	226
UpStream	449	0.92	Level	11	0	0.948	1.00	515
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1134.19 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4071 pc/h
V_3 or V_{av34} 2845 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4216 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7142	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4442	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 37.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.624 (Exibit 25-19)
S_R= 50.6 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 52.6 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 713 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6466	0.92	Level	11	0	0.948	1.00	7415
Ramp	439	0.92	Level	11	0	0.948	1.00	503
UpStream	713	0.92	Level	11	0	0.948	1.00	818
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1300.25 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4365 pc/h
V_3 or V_{av34} 3050 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4715 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7918	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5218	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 43.4 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.013 (Exibit 25-19)
S_R= 41.7 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 45.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 481 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6604	0.92	Level	11	0	0.948	1.00	7573
Ramp	687	0.92	Level	11	0	0.948	1.00	788
UpStream	481	0.92	Level	11	0	0.948	1.00	552
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1483.85 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 4501 pc/h
V_3 or V_{av34} 3072 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4873 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8361	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5661	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 45.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.400 (Exibit 25-19)
S_R= 32.8 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 37.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 244 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6239	0.92	Level	11	0	0.948	1.00	7155
Ramp	322	0.92	Level	11	0	0.948	1.00	369
UpStream	244	0.92	Level	11	0	0.948	1.00	280
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1304.74 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 4252 pc/h
V_3 or V_{av34} 2903 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4455 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7524	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4824	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 39.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.764 (Exibit 25-19)
S_R= 47.4 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 50.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 687 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7085	0.92	Level	11	0	0.948	1.00	8125
Ramp	481	0.92	Level	11	0	0.948	1.00	552
UpStream								
DownStream	687	0.92	Level	11	0	0.948	1.00	788

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = 3649.45 (Equation 25-8 or 25-9)

P_{FD} = 0.531 using Equation (Exhibit 25-12)

V_{12} = 4577 pc/h

V_3 or V_{av34} 3548 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes,V_{12a} = 5425 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8125	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7573	Exhibit 25-14	7050	Yes
V_R	552	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4577	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 49.1 (pc/mi/ln)

LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.478 (Exhibit 25-19)

S_R= 54.0 mph (Exhibit 25-19)

S_0= 64.7 mph (Exhibit 25-19)

S = 57.1 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 322 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6483	0.92	Level	11	0	0.948	1.00	7434
Ramp	244	0.92	Level	11	0	0.948	1.00	280
UpStream								
DownStream	322	0.92	Level	11	0	0.948	1.00	369

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = 1671.94 (Equation 25-8 or 25-9)
P_{FD} = 0.561 using Equation (Exhibit 25-12)
V_{12} = 4295 pc/h
V_3 or V_{av34} 3139 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4734 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7434	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7154	Exhibit 25-14	7050	Yes
V_R	280	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4295	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 43.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.453 (Exhibit 25-19)
S_R= 54.6 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.9 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 151 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6067	0.92	Level	11	0	0.948	1.00	6957
Ramp	1018	0.92	Level	11	0	0.948	1.00	1167
UpStream	151	0.92	Level	11	0	0.948	1.00	173
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1344.34 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4096 pc/h
V_3 or V_{av34} 2861 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4257 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8124	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5424	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 44.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.177 (Exibit 25-19)
S_R= 37.9 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 42.5 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 333 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5895	0.92	Level	11	0	0.948	1.00	6760
Ramp	588	0.92	Level	11	0	0.948	1.00	674
UpStream	333	0.92	Level	11	0	0.948	1.00	382
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1196.68 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 3980 pc/h
V_3 or V_{av34} 2780 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4060 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7434	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4734	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 39.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.737 (Exibit 25-19)
S_R= 48.1 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 50.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 1018 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6218	0.92	Level	11	0	0.948	1.00	7130
Ramp	151	0.92	Level	11	0	0.948	1.00	173
UpStream								
DownStream	1018	0.92	Level	11	0	0.948	1.00	1167

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.574 using Equation (Exhibit 25-12)
V_{12} = 4165 pc/h
V_3 or V_{av34} 2965 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4430 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7130	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	6957	Exhibit 25-14	7050	No
V_R	173	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4165	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 40.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.444 (Exhibit 25-19)
S_R= 54.8 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 58.2 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 588 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6228	0.92	Level	11	0	0.948	1.00	7142
Ramp	333	0.92	Level	11	0	0.948	1.00	382
UpStream								
DownStream	588	0.92	Level	11	0	0.948	1.00	674

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.564 using Equation (Exhibit 25-12)
V_{12} = 4194 pc/h
V_3 or V_{av34} 2948 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4442 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7142	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	6760	Exhibit 25-14	7050	No
V_R	382	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4194	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 40.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.462 (Exhibit 25-19)
S_R= 54.4 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.9 mph (Exhibit 25-15)

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APPENDIX 5.9

2014 With Project Conditions
Ramp Merge and Diverge Analysis Worksheets

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 378 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6634	0.92	Level	11	0	0.948	1.00	7607
Ramp	336	0.92	Level	11	0	0.948	1.00	385
UpStream								
DownStream	378	0.92	Level	11	0	0.948	1.00	433

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.552 using Equation (Exhibit 25-12)
V_{12} = 4372 pc/h
V_3 or V_{av34} 3235 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4907 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7607	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7222	Exhibit 25-14	7050	Yes
V_R	385	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4372	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 33.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.463 (Exhibit 25-19)
S_R= 54.4 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.6 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 677 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7180	0.92	Level	11	0	0.948	1.00	8234
Ramp	438	0.92	Level	11	0	0.948	1.00	502
UpStream								
DownStream	677	0.92	Level	11	0	0.948	1.00	776

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.531 using Equation (Exhibit 25-12)
V_{12} = 4608 pc/h
V_3 or V_{av34} 3626 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5534 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8234	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7732	Exhibit 25-14	7050	Yes
V_R	502	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4608	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 38.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.473 (Exhibit 25-19)
S_R= 54.1 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.2 mph (Exhibit 25-15)

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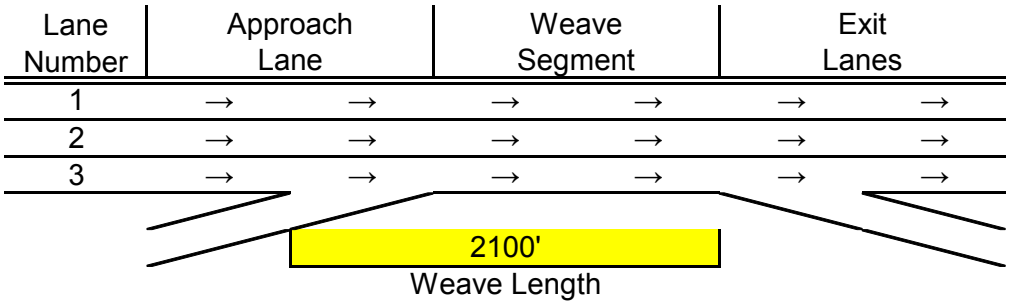
Weave Configuration

Roadway	I-15 Freeway Southbound
Segment:	El Cerritos Road ~ Cajalco Road
Description:	2014 With Project

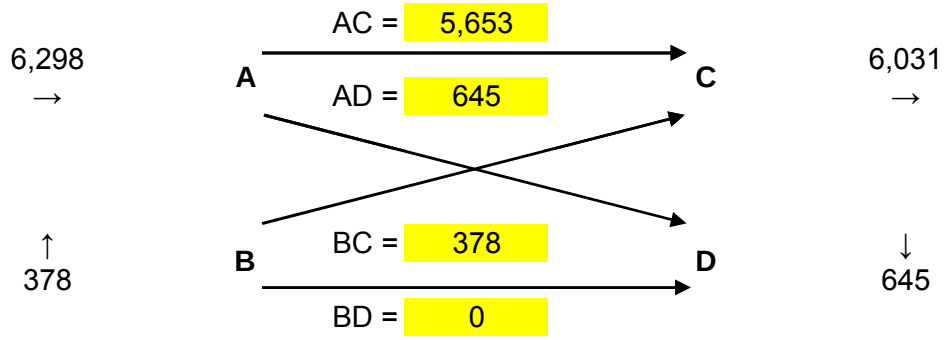


Number of Lane Change by Weaving Movements:

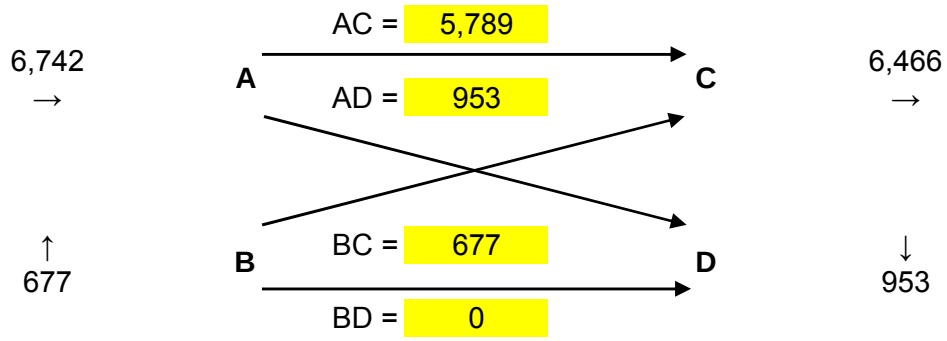
V_{w1}= 0 V_{w2}= 0

Per HCM Exhibit 24-5, Weave Configuration Type = **B**

2014 With Project AM Peak Hour Traffic



2014 With Project PM Peak Hour Traffic



FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/21/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2014 With Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.15
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.37
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5653	0.92	11	0	1.5	1.2	0.948	1.00	6482
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	645	0.92	11	0	1.5	1.2	0.948	1.00	739
V_{w2}	378	0.92	11	0	1.5	1.2	0.948	1.00	433
V_w				1172	V_{nw}				6482
V									7654

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.58	0.26		
Weaving and non-weaving speeds, Si (mi/h)	49.83	58.59		

Number of lanes required for unconstrained operation, Nw 0.44
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	57.05
Weaving segment density, D (pc/mi/ln)	44.72
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/16/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2014 With Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.22
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.42
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5789	0.92	11	0	1.5	1.2	0.948	1.00	6638
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	953	0.92	11	0	1.5	1.2	0.948	1.00	1092
V_{w2}	677	0.92	11	0	1.5	1.2	0.948	1.00	776
V_w				1868	V_{nw}				6638
V									8506

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.71	0.41		
Weaving and non-weaving speeds, Si (mi/h)	47.25	54.08		

Number of lanes required for unconstrained operation, Nw 0.68
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	52.42
Weaving segment density, D (pc/mi/ln)	54.09
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6959
Capacity as a 15-minute flow rate, c (veh/h)	6596
Capacity as a full-hour volume, c_h (veh/h)	6068

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 645 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6031	0.92	Level	11	0	0.948	1.00	6916
Ramp	280	0.92	Level	11	0	0.948	1.00	321
UpStream	645	0.92	Level	11	0	0.948	1.00	740
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1154.52 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4071 pc/h
V_3 or V_{av34} 2845 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4216 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7237	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4537	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 38.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.657 (Exibit 25-19)
S_R= 49.9 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 52.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 953 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6466	0.92	Level	11	0	0.948	1.00	7415
Ramp	544	0.92	Level	11	0	0.948	1.00	624
UpStream	953	0.92	Level	11	0	0.948	1.00	1093
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1326.15 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4365 pc/h
V_3 or V_{av34} 3050 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4715 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8039	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5339	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 44.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.105 (Exibit 25-19)
S_R= 39.6 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 43.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 481 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6825	0.92	Level	11	0	0.948	1.00	7826
Ramp	687	0.92	Level	11	0	0.948	1.00	788
UpStream	481	0.92	Level	11	0	0.948	1.00	552
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1538.00 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 4651 pc/h
V_3 or V_{av34} 3175 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5126 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8614	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5914	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 47.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.723 (Exibit 25-19)
S_R= 25.4 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 30.6 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 244 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6486	0.92	Level	11	0	0.948	1.00	7438
Ramp	322	0.92	Level	11	0	0.948	1.00	369
UpStream	244	0.92	Level	11	0	0.948	1.00	280
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1365.30 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 4420 pc/h
V_3 or V_{av34} 3018 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4738 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7807	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5107	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 41.4 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.923 (Exibit 25-19)
S_R= 43.8 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 47.4 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 687 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7306	0.92	Level	11	0	0.948	1.00	8378
Ramp	481	0.92	Level	11	0	0.948	1.00	552
UpStream								
DownStream	687	0.92	Level	11	0	0.948	1.00	788

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 3553.68 (Equation 25-8 or 25-9)
P_{FD} = 0.525 using Equation (Exhibit 25-12)
V_{12} = 4662 pc/h
V_3 or V_{av34} 3716 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5678 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8378	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7826	Exhibit 25-14	7050	Yes
V_R	552	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4662	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 51.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.478 (Exhibit 25-19)
S_R= 54.0 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.0 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 322 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6730	0.92	Level	11	0	0.948	1.00	7718
Ramp	244	0.92	Level	11	0	0.948	1.00	280
UpStream								
DownStream	322	0.92	Level	11	0	0.948	1.00	369

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 1623.88 (Equation 25-8 or 25-9)
P_{FD} = 0.554 using Equation (Exhibit 25-12)
V_{12} = 4402 pc/h
V_3 or V_{av34} 3316 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5018 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7718	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7438	Exhibit 25-14	7050	Yes
V_R	280	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4402	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 45.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.453 (Exhibit 25-19)
S_R= 54.6 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.7 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 238 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6067	0.92	Level	11	0	0.948	1.00	6957
Ramp	1239	0.92	Level	11	0	0.948	1.00	1421
UpStream	238	0.92	Level	11	0	0.948	1.00	273
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1398.69 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4096 pc/h
V_3 or V_{av34} 2861 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4257 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8378	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5678	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 46.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.433 (Exibit 25-19)
S_R= 32.0 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 37.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 425 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5895	0.92	Level	11	0	0.948	1.00	6760
Ramp	835	0.92	Level	11	0	0.948	1.00	958
UpStream	425	0.92	Level	11	0	0.948	1.00	487
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1257.45 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 3980 pc/h
V_3 or V_{av34} 2780 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4060 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7718	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5018	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 41.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.882 (Exibit 25-19)
S_R= 44.7 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 48.1 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 1239 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6305	0.92	Level	11	0	0.948	1.00	7230
Ramp	238	0.92	Level	11	0	0.948	1.00	273
UpStream								
DownStream	1239	0.92	Level	11	0	0.948	1.00	1421

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.567 using Equation (Exhibit 25-12)
V_{12} = 4215 pc/h
V_3 or V_{av34} 3015 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4530 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7230	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	6957	Exhibit 25-14	7050	No
V_R	273	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4215	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 41.4 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.453 (Exhibit 25-19)
S_R= 54.6 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 58.0 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2014 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 835 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6320	0.92	Level	11	0	0.948	1.00	7247
Ramp	425	0.92	Level	11	0	0.948	1.00	487
UpStream								
DownStream	835	0.92	Level	11	0	0.948	1.00	958

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.556 using Equation (Exhibit 25-12)
V_{12} = 4248 pc/h
V_3 or V_{av34} 2999 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4547 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7247	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	6760	Exhibit 25-14	7050	No
V_R	487	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4248	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 41.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.472 (Exhibit 25-19)
S_R= 54.1 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.6 mph (Exhibit 25-15)

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APPENDIX 5.10

2019 Without Project Conditions
Ramp Merge and Diverge Analysis Worksheets

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 436 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6693	0.92	Level	11	0	0.948	1.00	7675
Ramp	405	0.92	Level	11	0	0.948	1.00	464
UpStream								
DownStream	436	0.92	Level	11	0	0.948	1.00	500

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.547 using Equation (Exhibit 25-12)
V_{12} = 4407 pc/h
V_3 or V_{av34} 3268 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4975 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7675	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7211	Exhibit 25-14	7050	Yes
V_R	464	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4407	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 33.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.470 (Exhibit 25-19)
S_R= 54.2 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.5 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 725 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7346	0.92	Level	11	0	0.948	1.00	8424
Ramp	472	0.92	Level	11	0	0.948	1.00	541
UpStream								
DownStream	725	0.92	Level	11	0	0.948	1.00	831

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.525 using Equation (Exhibit 25-12)
V_{12} = 4676 pc/h
V_3 or V_{av34} 3748 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5724 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8424	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7883	Exhibit 25-14	7050	Yes
V_R	541	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4676	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 40.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.477 (Exhibit 25-19)
S_R= 54.0 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.0 mph (Exhibit 25-15)

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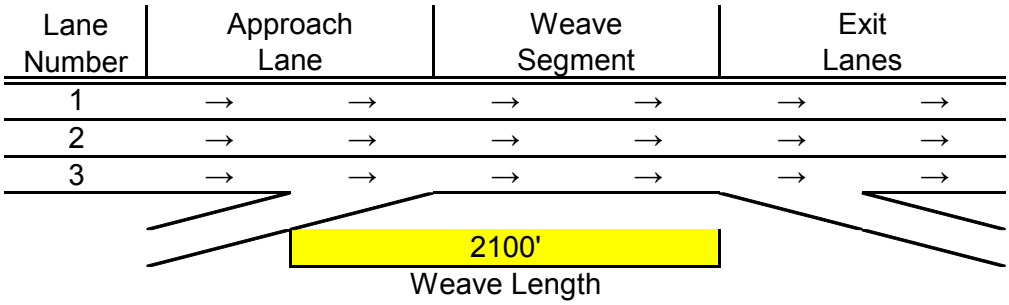
HCS+™ Version 5.21 Generated: 3/21/2011 10:58 AM

Weave Configuration

Roadway	I-15 Freeway Southbound
Segment:	El Cerritos Road ~ Cajalco Road
Description:	2019 Without Project

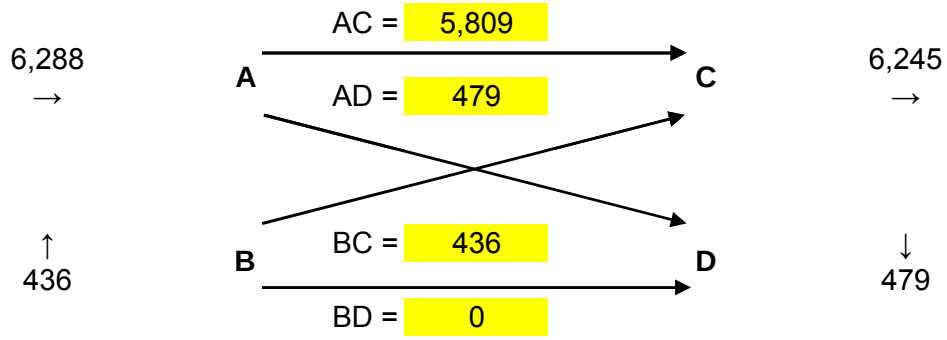


Number of Lane Change by Weaving Movements:

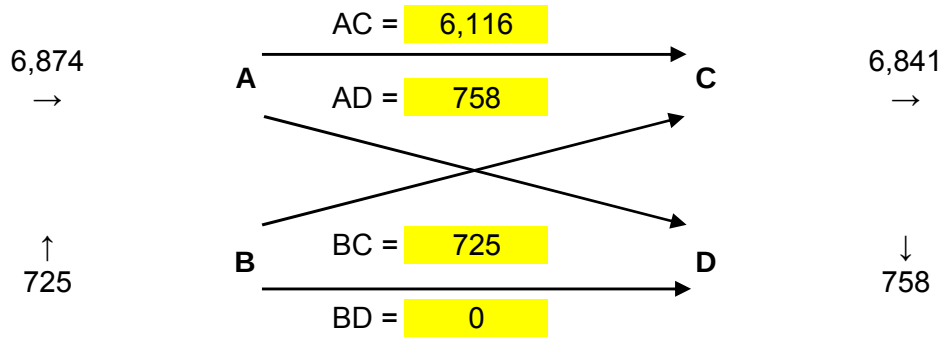
V_{w1}= 0 V_{w2}= 0

Per HCM Exhibit 24-5, Weave Configuration Type = **B**

2019 Without Project AM Peak Hour Traffic



2019 Without Project PM Peak Hour Traffic



FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/21/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2019 Without Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.14
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.48
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5809	0.92	11	0	1.5	1.2	0.948	1.00	6661
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	479	0.92	11	0	1.5	1.2	0.948	1.00	549
V_{w2}	436	0.92	11	0	1.5	1.2	0.948	1.00	499
V_w				1048	V_{nw}				6661
V									7709

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.56	0.24		
Weaving and non-weaving speeds, Si (mi/h)	50.18	59.32		

Number of lanes required for unconstrained operation, Nw 0.38
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	57.89
Weaving segment density, D (pc/mi/ln)	44.39
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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FREEWAY WEAVING WORKSHEET

General Information

Analyst	Charlene Hwang
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/16/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2019 Without Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.20
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.49
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	6116	0.92	11	0	1.5	1.2	0.948	1.00	7013
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	758	0.92	11	0	1.5	1.2	0.948	1.00	869
V_{w2}	725	0.92	11	0	1.5	1.2	0.948	1.00	831
V_w				1700	V_{nw}				7013
V									8713

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.69	0.37		
Weaving and non-weaving speeds, Si (mi/h)	47.62	55.17		

Number of lanes required for unconstrained operation, Nw 0.59
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	53.51
Weaving segment density, D (pc/mi/ln)	54.28
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 479 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6245	0.92	Level	11	0	0.948	1.00	7161
Ramp	225	0.92	Level	11	0	0.948	1.00	258
UpStream	479	0.92	Level	11	0	0.948	1.00	549
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1193.47 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4216 pc/h
V_3 or V_{av34} 2945 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4461 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7419	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4719	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 39.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.730 (Exibit 25-19)
S_R= 48.2 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 50.8 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 758 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6841	0.92	Level	11	0	0.948	1.00	7845
Ramp	447	0.92	Level	11	0	0.948	1.00	513
UpStream	758	0.92	Level	11	0	0.948	1.00	869
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1394.41 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4618 pc/h
V_3 or V_{av34} 3227 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5145 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8358	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5658	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 46.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.411 (Exibit 25-19)
S_R= 32.6 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 37.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 518 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7234	0.92	Level	11	0	0.948	1.00	8296
Ramp	723	0.92	Level	11	0	0.948	1.00	829
UpStream	518	0.92	Level	11	0	0.948	1.00	594
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1647.35 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 4930 pc/h
V_3 or V_{av34} 3366 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5596 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9125	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6425	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 51.4 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 2.686 (Exibit 25-19)
S_R= 3.2 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 4.5 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 291 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7021	0.92	Level	11	0	0.948	1.00	8051
Ramp	370	0.92	Level	11	0	0.948	1.00	424
UpStream	291	0.92	Level	11	0	0.948	1.00	334
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1508.25 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 4785 pc/h
V_3 or V_{av34} 3266 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5351 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8475	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5775	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 46.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.535 (Exibit 25-19)
S_R= 29.7 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 34.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 723 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7752	0.92	Level	11	0	0.948	1.00	8890
Ramp	518	0.92	Level	11	0	0.948	1.00	594
UpStream								
DownStream	723	0.92	Level	11	0	0.948	1.00	829

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.510 using Equation (Exhibit 25-12)
V_{12} = 4828 pc/h
V_3 or V_{av34} 4062 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 6190 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8890	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	8296	Exhibit 25-14	7050	Yes
V_R	594	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4828	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 55.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.481 (Exhibit 25-19)
S_R= 53.9 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.8 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 370 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7312	0.92	Level	11	0	0.948	1.00	8385
Ramp	291	0.92	Level	11	0	0.948	1.00	334
UpStream								
DownStream	370	0.92	Level	11	0	0.948	1.00	424

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.535 using Equation (Exhibit 25-12)
V_{12} = 4641 pc/h
V_3 or V_{av34} 3744 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5685 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8385	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	8051	Exhibit 25-14	7050	Yes
V_R	334	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4641	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 51.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.458 (Exhibit 25-19)
S_R= 54.5 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.4 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 156 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6698	0.92	Level	11	0	0.948	1.00	7681
Ramp	1054	0.92	Level	11	0	0.948	1.00	1209
UpStream	156	0.92	Level	11	0	0.948	1.00	179
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1508.26 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4522 pc/h
V_3 or V_{av34} 3159 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4981 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8890	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6190	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 50.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 2.196 (Exibit 25-19)
S_R= 14.5 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 18.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 369 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6698	0.92	Level	11	0	0.948	1.00	7681
Ramp	614	0.92	Level	11	0	0.948	1.00	704
UpStream	369	0.92	Level	11	0	0.948	1.00	423
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 1400.19 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4522 pc/h
V_3 or V_{av34} 3159 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4981 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8385	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5685	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 47.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.441 (Exibit 25-19)
S_R= 31.9 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 37.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 1054 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6854	0.92	Level	11	0	0.948	1.00	7860
Ramp	156	0.92	Level	11	0	0.948	1.00	179
UpStream								
DownStream	1054	0.92	Level	11	0	0.948	1.00	1209

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.555 using Equation (Exhibit 25-12)
V_{12} = 4444 pc/h
V_3 or V_{av34} 3416 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5160 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	7860	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7681	Exhibit 25-14	7050	Yes
V_R	179	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4444	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 46.8 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.444 (Exhibit 25-19)
S_R= 54.8 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.8 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	Charlene Hwang	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 614 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7067	0.92	Level	11	0	0.948	1.00	8104
Ramp	369	0.92	Level	11	0	0.948	1.00	423
UpStream								
DownStream	614	0.92	Level	11	0	0.948	1.00	704

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.538 using Equation (Exhibit 25-12)
V_{12} = 4555 pc/h
V_3 or V_{av34} 3549 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5404 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8104	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7681	Exhibit 25-14	7050	Yes
V_R	423	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4555	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 48.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.466 (Exhibit 25-19)
S_R= 54.3 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.4 mph (Exhibit 25-15)

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APPENDIX 5.11

2019 With Project Conditions
Ramp Merge and Diverge Analysis Worksheets

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 436 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7003	0.92	Level	11	0	0.948	1.00	8031
Ramp	405	0.92	Level	11	0	0.948	1.00	464
UpStream								
DownStream	436	0.92	Level	11	0	0.948	1.00	500

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.538 using Equation (Exhibit 25-12)
V_{12} = 4534 pc/h
V_3 or V_{av34} 3497 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5331 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8031	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7567	Exhibit 25-14	7050	Yes
V_R	464	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4534	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 36.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.470 (Exhibit 25-19)
S_R= 54.2 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.3 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 725 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7989	0.92	Level	11	0	0.948	1.00	9161
Ramp	472	0.92	Level	11	0	0.948	1.00	541
UpStream								
DownStream	725	0.92	Level	11	0	0.948	1.00	831

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.506 using Equation (Exhibit 25-12)
V_{12} = 4903 pc/h
V_3 or V_{av34} 4258 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 6461 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	9161	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	8620	Exhibit 25-14	7050	Yes
V_R	541	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4903	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 46.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.477 (Exhibit 25-19)
S_R= 54.0 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.8 mph (Exhibit 25-15)

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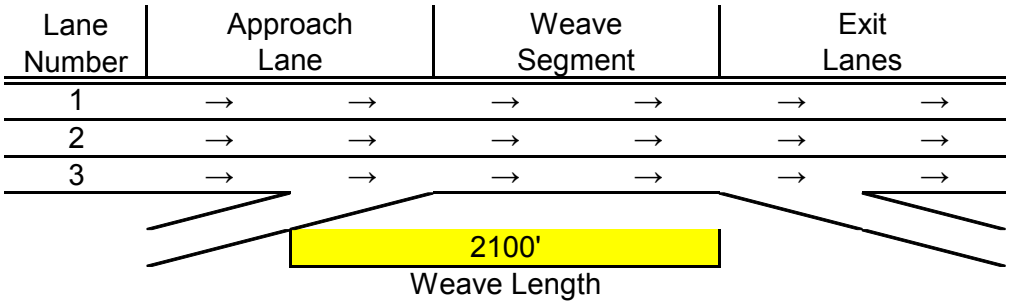
Weave Configuration

Roadway	I-15 Freeway Southbound
Segment:	El Cerritos Road ~ Cajalco Road
Description:	2019 With Project

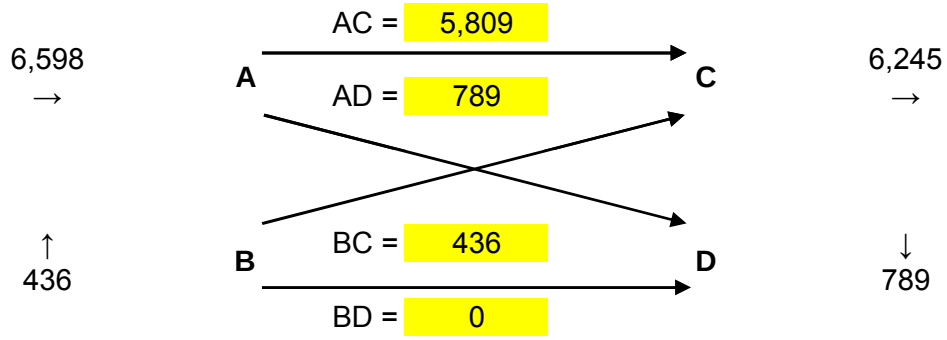


Number of Lane Change by Weaving Movements:

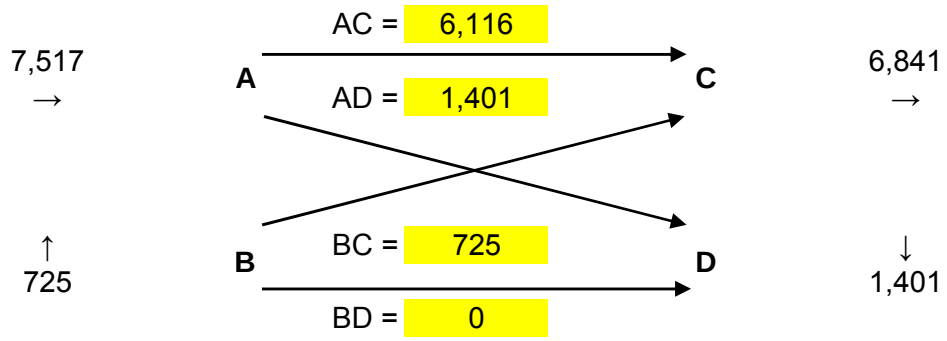
V_{w1}= 0 V_{w2}= 0

Per HCM Exhibit 24-5, Weave Configuration Type = **B**

2019 With Project AM Peak Hour Traffic



2019 With Project PM Peak Hour Traffic



FREEWAY WEAVING WORKSHEET

General Information

Analyst	CH
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/21/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2019 With Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.17
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.36
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	5809	0.92	11	0	1.5	1.2	0.948	1.00	6661
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	789	0.92	11	0	1.5	1.2	0.948	1.00	904
V_{w2}	436	0.92	11	0	1.5	1.2	0.948	1.00	499
V_w				1403	V_{nw}				6661
V									8064

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.62	0.31		
Weaving and non-weaving speeds, Si (mi/h)	48.85	57.08		

Number of lanes required for unconstrained operation, Nw 0.51
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	55.45
Weaving segment density, D (pc/mi/ln)	48.47
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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FREEWAY WEAVING WORKSHEET

General Information

Analyst	CH
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/16/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2019 With Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65
Weaving number of lanes, N	3
Weaving seg length, L (ft)	2100
Terrain	Level

Weaving type	B
Volume ratio, VR	0.26
Weaving ratio, R	0.34

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	6116	0.92	11	0	1.5	1.2	0.948	1.00	7013
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	1401	0.92	11	0	1.5	1.2	0.948	1.00	1606
V_{w2}	725	0.92	11	0	1.5	1.2	0.948	1.00	831
V_w				2437	V_{nw}				7013
V									9450

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.81	0.54		
Weaving and non-weaving speeds, Si (mi/h)	45.34	50.61		

Number of lanes required for unconstrained operation, Nw 0.85
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	49.14
Weaving segment density, D (pc/mi/ln)	64.11
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6783
Capacity as a 15-minute flow rate, c (veh/h)	6429
Capacity as a full-hour volume, c_h (veh/h)	5915

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 789 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6245	0.92	Level	11	0	0.948	1.00	7161
Ramp	391	0.92	Level	11	0	0.948	1.00	448
UpStream	789	0.92	Level	11	0	0.948	1.00	905
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1234.13 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4216 pc/h
V_3 or V_{av34} 2945 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4461 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	7609	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4909	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 41.1 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 0.821 (Exibit 25-19)
S_R= 46.1 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 49.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 1401 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6841	0.92	Level	11	0	0.948	1.00	7845
Ramp	745	0.92	Level	11	0	0.948	1.00	854
UpStream	1401	0.92	Level	11	0	0.948	1.00	1607
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1467.39 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4618 pc/h
V_3 or V_{av34} 3227 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5145 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8699	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5999	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 49.4 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.865 (Exibit 25-19)
S_R= 22.1 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 27.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 518 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7652	0.92	Level	11	0	0.948	1.00	8775
Ramp	723	0.92	Level	11	0	0.948	1.00	829
UpStream	518	0.92	Level	11	0	0.948	1.00	594
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1749.86 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 5215 pc/h
V_3 or V_{av34} 3560 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 6075 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9604	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6904	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 55.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 4.164 (Exibit 25-19)
S_R= -30.8 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 291 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7613	0.92	Level	11	0	0.948	1.00	8730
Ramp	370	0.92	Level	11	0	0.948	1.00	424
UpStream	291	0.92	Level	11	0	0.948	1.00	334
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1653.56 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 5188 pc/h
V_3 or V_{av34} 3542 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 6030 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9154	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6454	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 51.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 2.756 (Exibit 25-19)
S_R= 1.6 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 2.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 723 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8170	0.92	Level	11	0	0.948	1.00	9369
Ramp	518	0.92	Level	11	0	0.948	1.00	594
UpStream								
DownStream	723	0.92	Level	11	0	0.948	1.00	829

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.498 using Equation (Exhibit 25-12)
V_{12} = 4968 pc/h
V_3 or V_{av34} 4401 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 6669 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	9369	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	8775	Exhibit 25-14	7050	Yes
V_R	594	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4968	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 59.8 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.481 (Exhibit 25-19)
S_R= 53.9 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.6 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 370 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7904	0.92	Level	11	0	0.948	1.00	9064
Ramp	291	0.92	Level	11	0	0.948	1.00	334
UpStream								
DownStream	370	0.92	Level	11	0	0.948	1.00	424

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 1668.71 (Equation 25-8 or 25-9)
P_{FD} = 0.518 using Equation (Exhibit 25-12)
V_{12} = 4856 pc/h
V_3 or V_{av34} 4208 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 6364 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	9064	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	8730	Exhibit 25-14	7050	Yes
V_R	334	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4856	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 57.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.458 (Exhibit 25-19)
S_R= 54.5 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.2 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 303 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6698	0.92	Level	11	0	0.948	1.00	7681
Ramp	1472	0.92	Level	11	0	0.948	1.00	1688
UpStream	303	0.92	Level	11	0	0.948	1.00	347
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1610.77 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4522 pc/h
V_3 or V_{av34} 3159 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 4981 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9369	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6669	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 54.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 3.365 (Exibit 25-19)
S_R = -12.4 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 675 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6698	0.92	Level	11	0	0.948	1.00	7681
Ramp	1206	0.92	Level	11	0	0.948	1.00	1383
UpStream	675	0.92	Level	11	0	0.948	1.00	774
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1545.50 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4522 pc/h
V_3 or V_{av34} 3159 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 4981 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9064	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6364	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 52.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 2.557 (Exibit 25-19)
S_R= 6.2 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 8.4 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 1472 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7001	0.92	Level	11	0	0.948	1.00	8028
Ramp	303	0.92	Level	11	0	0.948	1.00	347
UpStream								
DownStream	1472	0.92	Level	11	0	0.948	1.00	1688

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.543 using Equation (Exhibit 25-12)
V_{12} = 4520 pc/h
V_3 or V_{av34} 3508 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5328 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8028	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7681	Exhibit 25-14	7050	Yes
V_R	347	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4520	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 48.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.459 (Exhibit 25-19)
S_R= 54.4 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 57.5 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2019 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2000 ft
V_D = 1206 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7373	0.92	Level	11	0	0.948	1.00	8455
Ramp	675	0.92	Level	11	0	0.948	1.00	774
UpStream								
DownStream	1206	0.92	Level	11	0	0.948	1.00	1383

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.513 using Equation (Exhibit 25-12)
V_{12} = 4715 pc/h
V_3 or V_{av34} 3740 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 5755 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8455	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7681	Exhibit 25-14	7050	Yes
V_R	774	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4715	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 51.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.498 (Exhibit 25-19)
S_R= 53.6 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.7 mph (Exhibit 25-15)

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APPENDIX 5.12

2035 Without Project Conditions
Ramp Merge and Diverge Analysis Worksheets

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 704 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7610	0.92	Level	11	0	0.948	1.00	8727
Ramp	754	0.92	Level	11	0	0.948	1.00	865
UpStream								
DownStream	704	0.92	Level	11	0	0.948	1.00	807

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.502 using Equation (Exhibit 25-12)
V_{12} = 4812 pc/h
V_3 or V_{av34} 3915 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 6027 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	8727	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	7862	Exhibit 25-14	7050	Yes
V_R	865	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4812	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 42.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.506 (Exhibit 25-19)
S_R= 53.4 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.4 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 900 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8824	0.92	Level	11	0	0.948	1.00	10119
Ramp	606	0.92	Level	11	0	0.948	1.00	695
UpStream								
DownStream	900	0.92	Level	11	0	0.948	1.00	1032

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.475 using Equation (Exhibit 25-12)
V_{12} = 5172 pc/h
V_3 or V_{av34} 4947 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 7419 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	10119	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	9424	Exhibit 25-14	7050	Yes
V_R	695	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5172	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 54.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.491 (Exhibit 25-19)
S_R= 53.7 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.3 mph (Exhibit 25-15)

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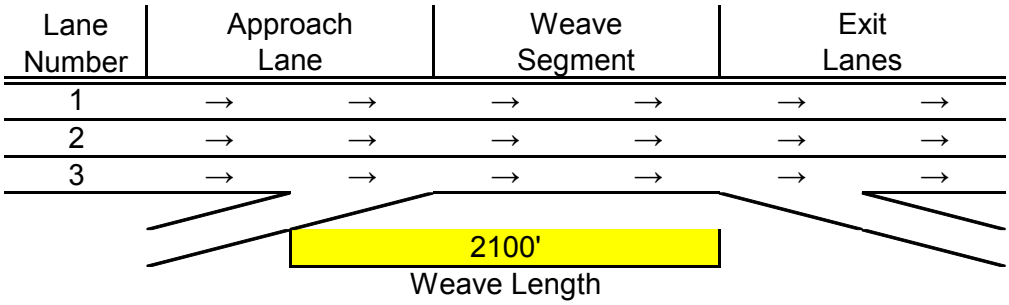
Weave Configuration

Roadway	I-15 Freeway Southbound
Segment:	El Cerritos Road ~ Cajalco Road
Description:	2035 Without Project

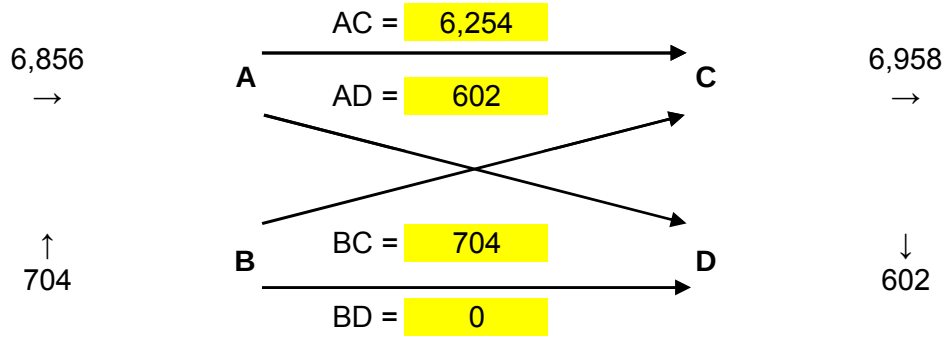


Number of Lane Change by Weaving Movements:

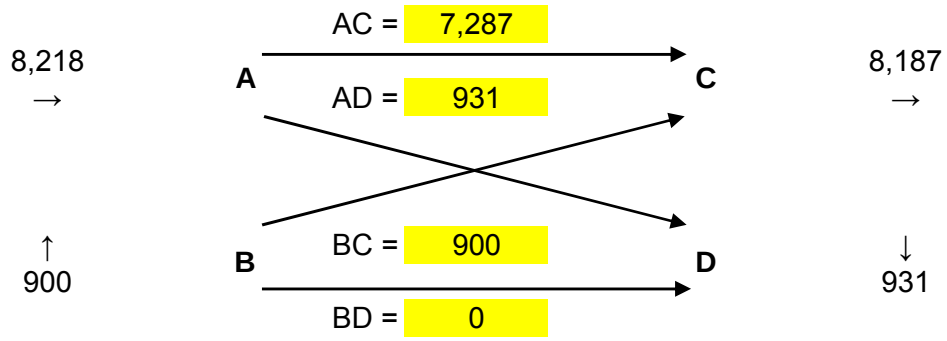
V_{w1}= 0 V_{w2}= 0

Per HCM Exhibit 24-5, Weave Configuration Type = **B**

2035 Without Project AM Peak Hour Traffic



2035 Without Project PM Peak Hour Traffic



FREEWAY WEAVING WORKSHEET

General Information

Analyst	CH
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/21/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2035 Without Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.17
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.46
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	6254	0.92	11	0	1.5	1.2	0.948	1.00	7171
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	602	0.92	11	0	1.5	1.2	0.948	1.00	690
V_{w2}	704	0.92	11	0	1.5	1.2	0.948	1.00	807
V_w				1497	V_{nw}				7171
V									8668

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.66	0.33		
Weaving and non-weaving speeds, Si (mi/h)	48.22	56.42		

Number of lanes required for unconstrained operation, Nw 0.51
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	54.81
Weaving segment density, D (pc/mi/ln)	52.72
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7050
Capacity as a 15-minute flow rate, c (veh/h)	6682
Capacity as a full-hour volume, c_h (veh/h)	6147

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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FREEWAY WEAVING WORKSHEET

General Information

Analyst	CH
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/16/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2035 Without Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.20
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.49
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	7287	0.92	11	0	1.5	1.2	0.948	1.00	8356
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	931	0.92	11	0	1.5	1.2	0.948	1.00	1067
V_{w2}	900	0.92	11	0	1.5	1.2	0.948	1.00	1032
V_w				2099	V_{nw}				8356
V									10455

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.79	0.46		
Weaving and non-weaving speeds, Si (mi/h)	45.77	52.78		

Number of lanes required for unconstrained operation, Nw 0.64
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	51.20
Weaving segment density, D (pc/mi/ln)	68.06
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7046
Capacity as a 15-minute flow rate, c (veh/h)	6679
Capacity as a full-hour volume, c_h (veh/h)	6145

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 602 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6958	0.92	Level	11	0	0.948	1.00	7979
Ramp	354	0.92	Level	11	0	0.948	1.00	406
UpStream	602	0.92	Level	11	0	0.948	1.00	690
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1400.19 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4697 pc/h
V_3 or V_{av34} 3282 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5279 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8385	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5685	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 47.1 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.441 (Exibit 25-19)
S_R= 31.9 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 37.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 931 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8187	0.92	Level	11	0	0.948	1.00	9388
Ramp	477	0.92	Level	11	0	0.948	1.00	547
UpStream	931	0.92	Level	11	0	0.948	1.00	1068
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1731.89 (Equation 25-2 or 25-3)
P_{FM} = 0.580 using Equation (Exhibit 25-5)
V_{12} = 5447 pc/h
V_3 or V_{av34} 3941 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 6688 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9935	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	7235	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 59.1 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 5.703 (Exibit 25-19)
S_R= -66.2 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 164 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6958	0.92	Level	11	0	0.948	1.00	7979
Ramp	190	0.92	Level	11	0	0.948	1.00	218
UpStream								
DownStream	164	0.92	Level	11	0	0.948	1.00	188

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4697 pc/h
V_3 or V_{av34} 3282 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5279 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8197	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5497	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 45.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.244 (Exibit 25-19)
S_R= 36.4 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 41.1 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp	Terrain: Level	Downstream Adj Ramp
☐ Yes ☐ On		☑ Yes ☑ On
☑ No ☐ Off		☐ No ☐ Off
L_{up} = ft		L_{down} = 1000 ft
V_u = veh/h	S_{FF} = 65.0 mph S_{FR} = 35.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	V_D = 290 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8187	0.92	Level	11	0	0.948	1.00	9388
Ramp	187	0.92	Level	11	0	0.948	1.00	214
UpStream								
DownStream	290	0.92	Level	11	0	0.948	1.00	333

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.589 using Equation (Exhibit 25-5)

V_{12} = 5527 pc/h

V_3 or V_{av34} 3861 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = 6688 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9602	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6902	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 56.7 (pc/mi/ln)

LOS = F (Exhibit 25-4)

Speed Determination

M_S = 4.171 (Exibit 25-19)

S_R = -30.9 mph (Exhibit 25-19)

S_0 = 56.1 mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R = mph (Exhibit 25-19)

S_0 = mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Slip On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 1000 ft
V_u = 190 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7148	0.92	Level	11	0	0.948	1.00	8197
Ramp	164	0.92	Level	11	0	0.948	1.00	188
UpStream	190	0.92	Level	11	0	0.948	1.00	218
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4826 pc/h
V_3 or V_{av34} 3371 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 5497 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8385	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5685	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 47.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.441 (Exibit 25-19)
S_R = 31.9 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = 37.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Slip On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 1000 ft
V_u = 187 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8374	0.92	Level	11	0	0.948	1.00	9603
Ramp	290	0.92	Level	11	0	0.948	1.00	333
UpStream	187	0.92	Level	11	0	0.948	1.00	214
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 5653 pc/h
V_3 or V_{av34} 3950 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 6903 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9936	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	7236	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 59.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 5.708 (Exibit 25-19)
S_R = -66.3 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 663 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9699	0.92	Level	11	0	0.948	1.00	11122
Ramp	852	0.92	Level	11	0	0.948	1.00	977
UpStream	663	0.92	Level	11	0	0.948	1.00	760
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2283.79 (Equation 25-2 or 25-3)
P_{FM} = 0.594 using Equation (Exhibit 25-5)
V_{12} = 6610 pc/h
V_3 or V_{av34} 4512 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 8422 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12099	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9399	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 74.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 47.377 (Exibit 25-19)
S_R= -1024.7 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 310.4 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 524 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10251	0.92	Level	11	0	0.948	1.00	11755
Ramp	578	0.92	Level	11	0	0.948	1.00	663
UpStream	524	0.92	Level	11	0	0.948	1.00	601
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2352.05 (Equation 25-2 or 25-3)
P_{FM} = 0.591 using Equation (Exhibit 25-5)
V_{12} = 6945 pc/h
V_3 or V_{av34} 4810 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 9055 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12418	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9718	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 77.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 65.074 (Exibit 25-19)
S_R= -1431.7 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 300.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 852 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10362	0.92	Level	11	0	0.948	1.00	11883
Ramp	663	0.92	Level	11	0	0.948	1.00	760
UpStream								
DownStream	852	0.92	Level	11	0	0.948	1.00	977

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = 3409.54 (Equation 25-8 or 25-9)
P_{FD} = 0.428 using Equation (Exhibit 25-12)
V_{12} = 5520 pc/h
V_3 or V_{av34} 6363 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 9183 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	11883	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	11123	Exhibit 25-14	7050	Yes
V_R	760	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5520	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 81.4 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.496 (Exhibit 25-19)
S_R= 53.6 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 55.8 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 578 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10775	0.92	Level	11	0	0.948	1.00	12356
Ramp	524	0.92	Level	11	0	0.948	1.00	601
UpStream								
DownStream	578	0.92	Level	11	0	0.948	1.00	663

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 2142.08 (Equation 25-8 or 25-9)
P_{FD} = 0.423 using Equation (Exhibit 25-12)
V_{12} = 5579 pc/h
V_3 or V_{av34} 6777 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 9656 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	12356	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	11755	Exhibit 25-14	7050	Yes
V_R	601	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5579	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 85.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.482 (Exhibit 25-19)
S_R= 53.9 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 55.9 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 174 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9183	0.92	Level	11	0	0.948	1.00	10531
Ramp	1179	0.92	Level	11	0	0.948	1.00	1352
UpStream	174	0.92	Level	11	0	0.948	1.00	200
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2148.76 (Equation 25-2 or 25-3)
P_{FM} = 0.579 using Equation (Exhibit 25-5)
V_{12} = 6099 pc/h
V_3 or V_{av34} 4432 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 7831 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	11883	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9183	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 74.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 38.241 (Exibit 25-19)
S_R= -814.5 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 322.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 523 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10069	0.92	Level	11	0	0.948	1.00	11547
Ramp	706	0.92	Level	11	0	0.948	1.00	810
UpStream	523	0.92	Level	11	0	0.948	1.00	600
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2250.20 (Equation 25-2 or 25-3)
P_{FM} = 0.573 using Equation (Exhibit 25-5)
V_{12} = 6613 pc/h
V_3 or V_{av34} 4934 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 8847 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12357	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9657	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 77.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 61.253 (Exibit 25-19)
S_R= -1343.8 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 301.6 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 1000 ft
V_u = 362 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9545	0.92	Level	11	0	0.948	1.00	10946
Ramp	817	0.92	Level	11	0	0.948	1.00	937
UpStream	362	0.92	Level	11	0	0.948	1.00	415
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2148.76 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 6444 pc/h
V_3 or V_{av34} 4502 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 8246 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	11883	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9183	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 74.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 38.241 (Exibit 25-19)
S_R = -814.5 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = 322.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project
Project Description	ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements		

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 1000 ft
V_u = 257 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10326	0.92	Level	11	0	0.948	1.00	11841
Ramp	449	0.92	Level	11	0	0.948	1.00	515
UpStream	257	0.92	Level	11	0	0.948	1.00	295
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2249.98 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 6971 pc/h
V_3 or V_{av34} 4870 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 9141 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12356	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9656	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 78.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 61.192 (Exibit 25-19)
S_R= -1342.4 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 301.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1000 ft
V_u = 174 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9183	0.92	Level	11	0	0.948	1.00	10531
Ramp	362	0.92	Level	11	0	0.948	1.00	415
UpStream	174	0.92	Level	11	0	0.948	1.00	200
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1903.84 (Equation 25-2 or 25-3)
P_{FM} = 0.529 using Equation (Exhibit 25-5)
V_{12} = 5568 pc/h
V_3 or V_{av34} 4963 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes, V_{12a} = 7831 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	10946	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	8246	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 67.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 15.168 (Exibit 25-19)
S_R = -283.9 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = 572.9 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1000 ft
V_u = 523 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10069	0.92	Level	11	0	0.948	1.00	11547
Ramp	257	0.92	Level	11	0	0.948	1.00	295
UpStream	523	0.92	Level	11	0	0.948	1.00	600
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2095.59 (Equation 25-2 or 25-3)
P_{FM} = 0.517 using Equation (Exhibit 25-5)
V_{12} = 5966 pc/h
V_3 or V_{av34} 5581 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes, V_{12a} = 8847 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	11842	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9142	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 74.8 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 36.724 (Exibit 25-19)
S_R = -779.6 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = 325.1 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 362 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9357	0.92	Level	11	0	0.948	1.00	10730
Ramp	174	0.92	Level	11	0	0.948	1.00	200
UpStream								
DownStream	362	0.92	Level	11	0	0.948	1.00	415

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.483 using Equation (Exhibit 25-12)
V_{12} = 5281 pc/h
V_3 or V_{av34} 5449 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 8030 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	10730	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	10530	Exhibit 25-14	7050	Yes
V_R	200	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5281	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 71.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.446 (Exhibit 25-19)
S_R= 54.7 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.9 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/16/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 Without Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 257 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10592	0.92	Level	11	0	0.948	1.00	12146
Ramp	523	0.92	Level	11	0	0.948	1.00	600
UpStream								
DownStream	257	0.92	Level	11	0	0.948	1.00	295

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.429 using Equation (Exhibit 25-12)
V_{12} = 5550 pc/h
V_3 or V_{av34} 6596 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 9446 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	12146	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	11546	Exhibit 25-14	7050	Yes
V_R	600	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5550	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 83.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.482 (Exhibit 25-19)
S_R= 53.9 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.0 mph (Exhibit 25-15)

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APPENDIX 5.13

2035 With Project Conditions
Ramp Merge and Diverge Analysis Worksheets

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 704 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7920	0.92	Level	11	0	0.948	1.00	9082
Ramp	754	0.92	Level	11	0	0.948	1.00	865
UpStream								
DownStream	704	0.92	Level	11	0	0.948	1.00	807

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.493 using Equation (Exhibit 25-12)
V_{12} = 4917 pc/h
V_3 or V_{av34} 4165 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 6382 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	9082	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	8217	Exhibit 25-14	7050	Yes
V_R	865	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4917	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 45.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.506 (Exhibit 25-19)
S_R= 53.4 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.3 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2500 ft
V_D = 900 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9467	0.92	Level	11	0	0.948	1.00	10856
Ramp	606	0.92	Level	11	0	0.948	1.00	695
UpStream								
DownStream	900	0.92	Level	11	0	0.948	1.00	1032

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.457 using Equation (Exhibit 25-12)
V_{12} = 5335 pc/h
V_3 or V_{av34} 5521 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 8156 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	10856	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	10161	Exhibit 25-14	7050	Yes
V_R	695	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5335	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 60.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.491 (Exhibit 25-19)
S_R= 53.7 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.1 mph (Exhibit 25-15)

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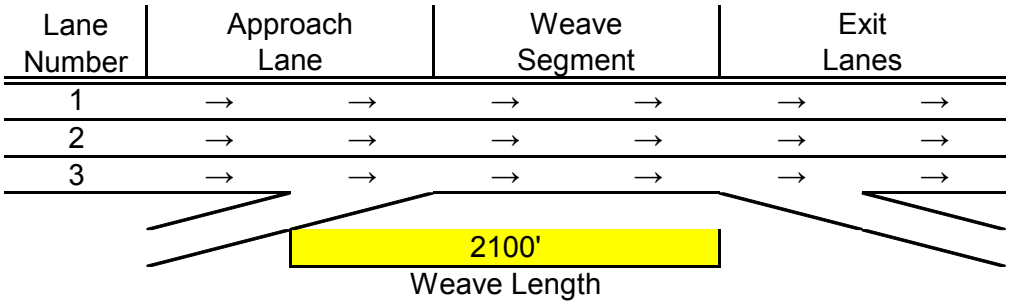
Weave Configuration

Roadway	I-15 Freeway Southbound
Segment:	El Cerritos Road ~ Cajalco Road
Description:	2035 With Project

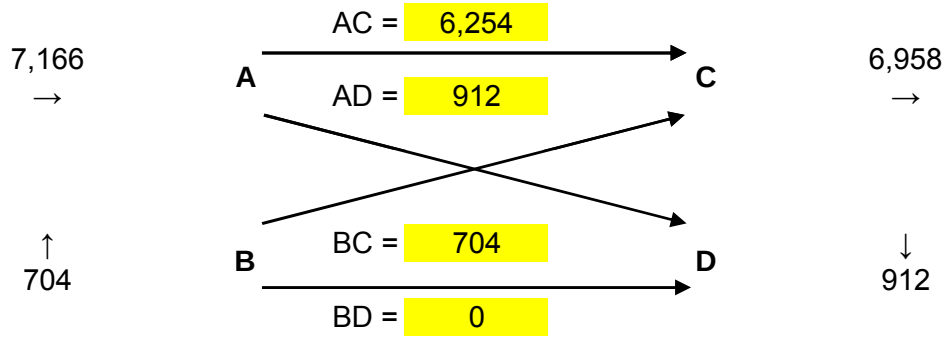


Number of Lane Change by Weaving Movements:

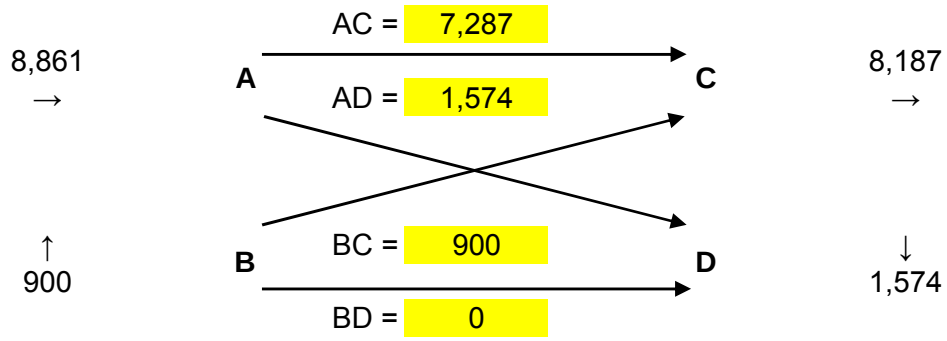
V_{w1}= 0 V_{w2}= 0

Per HCM Exhibit 24-5, Weave Configuration Type = **B**

2035 With Project AM Peak Hour Traffic



2035 With Project PM Peak Hour Traffic



FREEWAY WEAVING WORKSHEET

General Information

Analyst	CH
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/21/2011
Analysis Time Period	AM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2035 With Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.21
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.44
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	6254	0.92	11	0	1.5	1.2	0.948	1.00	7171
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	912	0.92	11	0	1.5	1.2	0.948	1.00	1045
V_{w2}	704	0.92	11	0	1.5	1.2	0.948	1.00	807
V_w				1852	V_{nw}				7171
V									9023

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.72	0.40		
Weaving and non-weaving speeds, Si (mi/h)	47.05	54.22		

Number of lanes required for unconstrained operation, Nw 0.64
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	52.57
Weaving segment density, D (pc/mi/ln)	57.21
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	7026
Capacity as a 15-minute flow rate, c (veh/h)	6660
Capacity as a full-hour volume, c_h (veh/h)	6127

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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FREEWAY WEAVING WORKSHEET

General Information

Analyst	CH
Agency/Company	Urban Crossroads, Inc.
Date Performed	3/17/2011
Analysis Time Period	PM Peak Hour

Site Information

Freeway/Dir of Travel	I-15 Southbound
Weaving Seg Location	El Cerritos Rd. ~ Cajalco Rd.
Jurisdiction	Caltrans
Analysis Year	2035 With Project

Inputs

Freeway free-flow speed, S_{FF} (mi/h)	65	Weaving type	B
Weaving number of lanes, N	3	Volume ratio, VR	0.25
Weaving seg length, L (ft)	2100	Weaving ratio, R	0.36
Terrain	Level		

Conversions to pc/h Under Base Conditions

(pc/h)	V	PHF	Truck %	RV %	E_T	E_R	f_{HV}	f_p	v
V_{o1}	7287	0.92	11	0	1.5	1.2	0.948	1.00	8356
V_{o2}	0	0.92	11	0	1.5	1.2	0.948	1.00	0
V_{w1}	1574	0.92	11	0	1.5	1.2	0.948	1.00	1804
V_{w2}	900	0.92	11	0	1.5	1.2	0.948	1.00	1032
V_w				2836	V_{nw}				8356
V									11192

Weaving and Non-Weaving Speeds

	Unconstrained		Constrained	
	Weaving (i = w)	Non-Weaving (i = nw)	Weaving (i = w)	Non-Weaving (= nw)
a (Exhibit 24-6)	0.08	0.0020		
b (Exhibit 24-6)	2.20	6.00		
c (Exhibit 24-6)	0.70	1.00		
d (Exhibit 24-6)	0.50	0.50		
Weaving intensity factor, Wi	0.91	0.63		
Weaving and non-weaving speeds, Si (mi/h)	43.83	48.72		

Number of lanes required for unconstrained operation, Nw 0.86
Maximum number of lanes, Nw (max) 3.50

☑ If Nw < Nw(max) unconstrained operation ☐ if Nw > Nw (max) constrained operation

Weaving Segment Speed, Density, Level of Service, and Capacity

Weaving segment speed, S (mi/h)	47.38
Weaving segment density, D (pc/mi/ln)	78.74
Level of service, LOS	F
Capacity of base condition, c_b (pc/h)	6803
Capacity as a 15-minute flow rate, c (veh/h)	6448
Capacity as a full-hour volume, c_h (veh/h)	5932

Notes

a. Weaving segments longer than 2500 ft. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
b. Capacity constrained by basic freeway capacity.
c. Capacity occurs under constrained operating conditions.
d. Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
e. Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
f. Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
g. Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
h. Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
i. Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 912 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6958	0.92	Level	11	0	0.948	1.00	7979
Ramp	520	0.92	Level	11	0	0.948	1.00	596
UpStream	912	0.92	Level	11	0	0.948	1.00	1046
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1440.85 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4697 pc/h
V_3 or V_{av34} 3282 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 5279 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8575	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5875	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 48.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.681 (Exibit 25-19)
S_R = 26.3 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = 31.6 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 1600 ft
V_u = 1574 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8187	0.92	Level	11	0	0.948	1.00	9388
Ramp	775	0.92	Level	11	0	0.948	1.00	889
UpStream	1574	0.92	Level	11	0	0.948	1.00	1805
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1805.08 (Equation 25-2 or 25-3)
P_{FM} = 0.576 using Equation (Exhibit 25-5)
V_{12} = 5404 pc/h
V_3 or V_{av34} 3984 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 6688 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	10277	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	7577	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 61.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 7.909 (Exibit 25-19)
S_R= -116.9 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 330 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	6958	0.92	Level	11	0	0.948	1.00	7979
Ramp	190	0.92	Level	11	0	0.948	1.00	218
UpStream								
DownStream	330	0.92	Level	11	0	0.948	1.00	378

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4697 pc/h
V_3 or V_{av34} 3282 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5279 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8197	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5497	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 45.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.244 (Exibit 25-19)
S_R= 36.4 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 41.1 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 100 ft
V_D = 588 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8187	0.92	Level	11	0	0.948	1.00	9388
Ramp	187	0.92	Level	11	0	0.948	1.00	214
UpStream								
DownStream	588	0.92	Level	11	0	0.948	1.00	674

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.589 using Equation (Exhibit 25-5)

V_{12} = 5527 pc/h

V_3 or V_{av34} 3861 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = 6688 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	9602	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	6902	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 56.7 (pc/mi/ln)

LOS = F (Exhibit 25-4)

Speed Determination

M_S = 4.171 (Exibit 25-19)

S_R= -30.9 mph (Exhibit 25-19)

S_0= 56.1 mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Slip On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 1000 ft
V_u = 190 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	7148	0.92	Level	11	0	0.948	1.00	8197
Ramp	330	0.92	Level	11	0	0.948	1.00	378
UpStream	190	0.92	Level	11	0	0.948	1.00	218
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 4826 pc/h
V_3 or V_{av34} 3371 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 5497 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	8575	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	5875	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$
D_R = 48.6 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 1.681 (Exibit 25-19)
S_R= 26.3 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 31.6 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Southbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Slip On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 100 ft
V_u = 187 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	8374	0.92	Level	11	0	0.948	1.00	9603
Ramp	588	0.92	Level	11	0	0.948	1.00	674
UpStream	187	0.92	Level	11	0	0.948	1.00	214
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 5653 pc/h
V_3 or V_{av34} 3950 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 6903 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	10277	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	7577	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 61.8 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 7.909 (Exibit 25-19)
S_R = -116.9 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 663 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10117	0.92	Level	11	0	0.948	1.00	11602
Ramp	852	0.92	Level	11	0	0.948	1.00	977
UpStream	663	0.92	Level	11	0	0.948	1.00	760
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2386.51 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 6829 pc/h
V_3 or V_{av34} 4773 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 8902 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12579	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9879	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 78.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 76.392 (Exibit 25-19)
S_R= -1692.0 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 297.3 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerrito On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2300 ft
V_u = 524 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10843	0.92	Level	11	0	0.948	1.00	12434
Ramp	578	0.92	Level	11	0	0.948	1.00	663
UpStream	524	0.92	Level	11	0	0.948	1.00	601
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2497.36 (Equation 25-2 or 25-3)
P_{FM} = 0.582 using Equation (Exhibit 25-5)
V_{12} = 7232 pc/h
V_3 or V_{av34} 5202 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 9734 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	13097	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	10397	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 82.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 128.048 (Exibit 25-19)
S_R= -2880.1 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 294.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/21/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 852 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10780	0.92	Level	11	0	0.948	1.00	12362
Ramp	663	0.92	Level	11	0	0.948	1.00	760
UpStream								
DownStream	852	0.92	Level	11	0	0.948	1.00	977

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 3283.31 (Equation 25-8 or 25-9)
P_{FD} = 0.416 using Equation (Exhibit 25-12)
V_{12} = 5586 pc/h
V_3 or V_{av34} 6776 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 9662 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	12362	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	11602	Exhibit 25-14	7050	Yes
V_R	760	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5586	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 85.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.496 (Exhibit 25-19)
S_R= 53.6 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 55.7 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	El Cerritos Rd. Off-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2300 ft
V_D = 578 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	11367	0.92	Level	11	0	0.948	1.00	13035
Ramp	524	0.92	Level	11	0	0.948	1.00	601
UpStream								
DownStream	578	0.92	Level	11	0	0.948	1.00	663

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = 2039.19 (Equation 25-8 or 25-9)
P_{FD} = 0.406 using Equation (Exhibit 25-12)
V_{12} = 5655 pc/h
V_3 or V_{av34} 7380 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 10335 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	13035	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	12434	Exhibit 25-14	7050	Yes
V_R	601	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5655	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 91.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.482 (Exhibit 25-19)
S_R= 53.9 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 55.8 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 321 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9183	0.92	Level	11	0	0.948	1.00	10531
Ramp	1597	0.92	Level	11	0	0.948	1.00	1831
UpStream	321	0.92	Level	11	0	0.948	1.00	368
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2251.27 (Equation 25-2 or 25-3)
P_{FM} = 0.573 using Equation (Exhibit 25-5)
V_{12} = 6031 pc/h
V_3 or V_{av34} 4500 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 7831 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12362	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9662	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 77.5 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 61.559 (Exibit 25-19)
S_R= -1350.9 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 301.5 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2000 ft
V_u = 829 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10069	0.92	Level	11	0	0.948	1.00	11547
Ramp	1298	0.92	Level	11	0	0.948	1.00	1488
UpStream	829	0.92	Level	11	0	0.948	1.00	951
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = 2395.29 (Equation 25-2 or 25-3)
P_{FM} = 0.564 using Equation (Exhibit 25-5)
V_{12} = 6508 pc/h
V_3 or V_{av34} 5039 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 8847 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	13035	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	10335	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 82.9 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 120.381 (Exibit 25-19)
S_R= -2703.8 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 294.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 1000 ft
V_u = 780 veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9963	0.92	Level	11	0	0.948	1.00	11425
Ramp	871	0.92	Level	11	0	0.948	1.00	999
UpStream	780	0.92	Level	11	0	0.948	1.00	894
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2264.54 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 6726 pc/h
V_3 or V_{av34} 4699 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 8725 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12424	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9724	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 78.4 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 65.477 (Exibit 25-19)
S_R = -1441.0 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = 300.1 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project
Project Description	ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements		

Inputs

Upstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{up} = 1000 ft
V_u = 849 veh/h

Terrain: Level
S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10918	0.92	Level	11	0	0.948	1.00	12520
Ramp	449	0.92	Level	11	0	0.948	1.00	515
UpStream	849	0.92	Level	11	0	0.948	1.00	974
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 2395.29 (Equation 25-2 or 25-3)
P_{FM} = 0.589 using Equation (Exhibit 25-5)
V_{12} = 7371 pc/h
V_3 or V_{av34} 5149 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = 9820 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	13035	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	10335	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 83.3 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 120.381 (Exibit 25-19)
S_R = -2703.8 mph (Exhibit 25-19)
S_0 = 56.1 mph (Exhibit 25-19)
S = 294.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R = mph (Exhibit 25-19)
S_0 = mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 817 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9183	0.92	Level	11	0	0.948	1.00	10531
Ramp	780	0.92	Level	11	0	0.948	1.00	894
UpStream								
DownStream	817	0.92	Level	11	0	0.948	1.00	937

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = 0.586 using Equation (Exhibit 25-5)
V_{12} = 6170 pc/h
V_3 or V_{av34} 4361 pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes,V_{12a} = 7831 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	11425	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	8725	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 71.2 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

M_S = 24.304 (Exibit 25-19)
S_R= -494.0 mph (Exhibit 25-19)
S_0= 56.1 mph (Exhibit 25-19)
S = 374.7 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = using Equation (Exhibit 25-12)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Loop On-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694) w/ Improvements

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 449 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10069	0.92	Level	11	0	0.948	1.00	11547
Ramp	849	0.92	Level	11	0	0.948	1.00	974
UpStream								
DownStream	449	0.92	Level	11	0	0.948	1.00	515

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 0.586 using Equation (Exhibit 25-5)

V_{12} = 6765 pc/h

V_3 or V_{av34} 4782 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = 8847 pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	12521	Exhibit 25-7		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	9821	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 79.7 (pc/mi/ln)

LOS = F (Exhibit 25-4)

Speed Determination

M_S = 72.124 (Exibit 25-19)

S_R= -1593.9 mph (Exhibit 25-19)

S_0= 56.1 mph (Exhibit 25-19)

S = 298.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	CH	Freeway/Dir of Travel	I-15 Northbound
Agency or Company	Urban Crossroads, Inc.	Junction	Cajalco Rd. Off-Ramp
Date Performed	3/17/2011	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	2035 With Project

Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 780 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	9504	0.92	Level	11	0	0.948	1.00	10899
Ramp	321	0.92	Level	11	0	0.948	1.00	368
UpStream								
DownStream	780	0.92	Level	11	0	0.948	1.00	894

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.471 using Equation (Exhibit 25-12)
V_{12} = 5324 pc/h
V_3 or V_{av34} 5575 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 8199 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	10899	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	10531	Exhibit 25-14	7050	Yes
V_R	368	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5324	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 73.0 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.461 (Exhibit 25-19)
S_R= 54.4 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 56.6 mph (Exhibit 25-15)

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Project Description ARANTINE HILLS SPECIFIC PLAN (JN 06694)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 65.0 mph S_{FR} = 35.0 mph
Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 1000 ft
V_D = 849 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	10898	0.92	Level	11	0	0.948	1.00	12497
Ramp	829	0.92	Level	11	0	0.948	1.00	951
UpStream								
DownStream	849	0.92	Level	11	0	0.948	1.00	974

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 0.404 using Equation (Exhibit 25-12)
V_{12} = 5614 pc/h
V_3 or V_{av34} 6883 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☑ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No
If Yes,V_{12a} = 9797 pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	12497	Exhibit 25-14	7050	Yes
$V_{FO} = V_F - V_R$	11546	Exhibit 25-14	7050	Yes
V_R	951	Exhibit 25-3	2000	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	5614	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$
D_R = 86.7 (pc/mi/ln)
LOS = F (Exhibit 25-4)

Speed Determination

D_s = 0.514 (Exhibit 25-19)
S_R= 53.2 mph (Exhibit 25-19)
S_0= 64.7 mph (Exhibit 25-19)
S = 55.3 mph (Exhibit 25-15)

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APPENDIX 6.1

2035 Conceptual Intersection Layouts

EXHIBIT 1

2035 CONCEPTUAL STRIPING PLAN FOR MASTERS DRIVE AT CALIFORNIA DRIVE

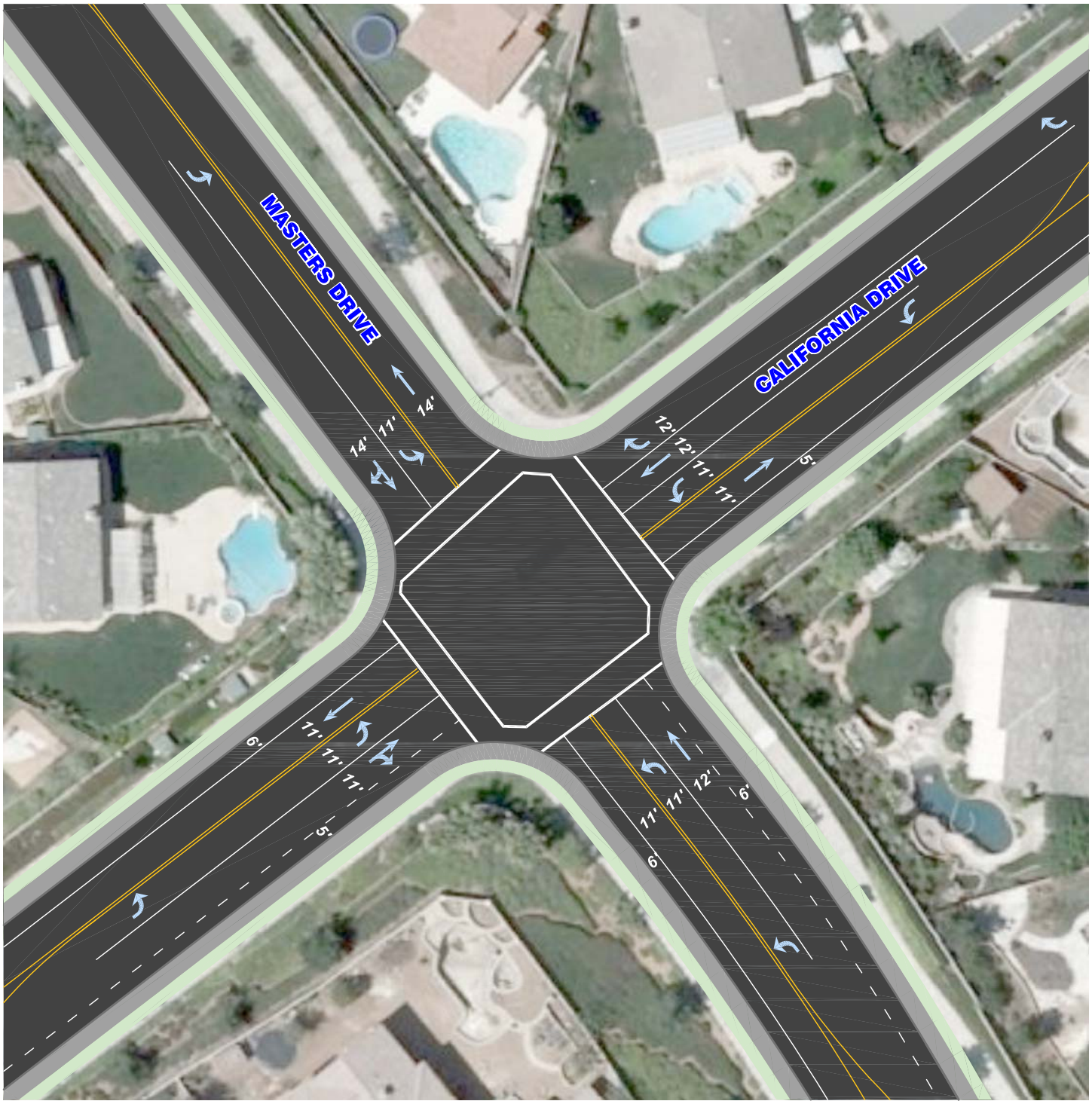

EXHIBIT 2

2035 CONCEPTUAL STRIPING PLAN FOR MASTERS DRIVE AT BENNETT AVENUE

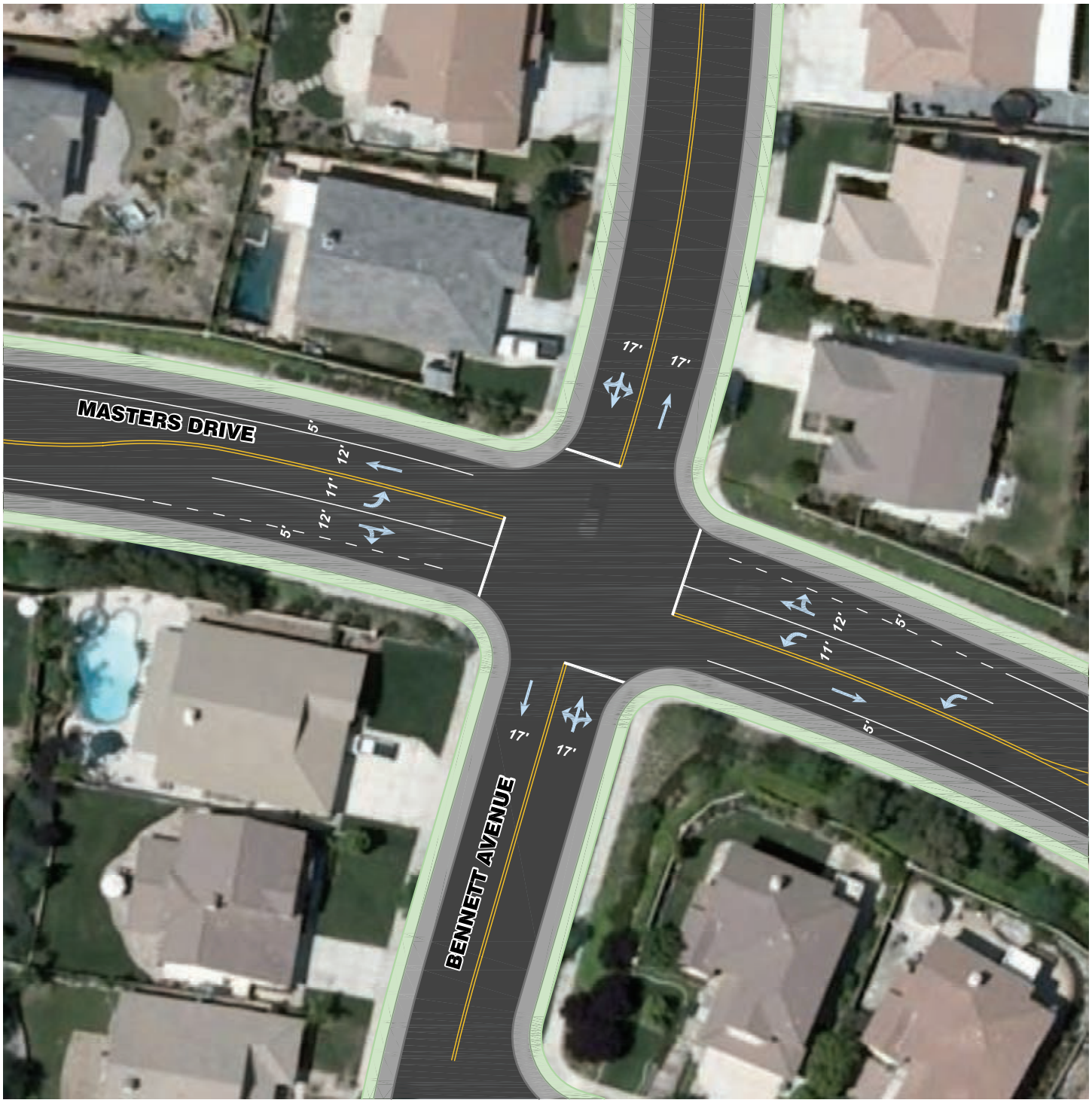

EXHIBIT 3

2035 CONCEPTUAL STRIPING PLAN FOR MASTERS DRIVE AT EAGLE GLEN PARKWAY

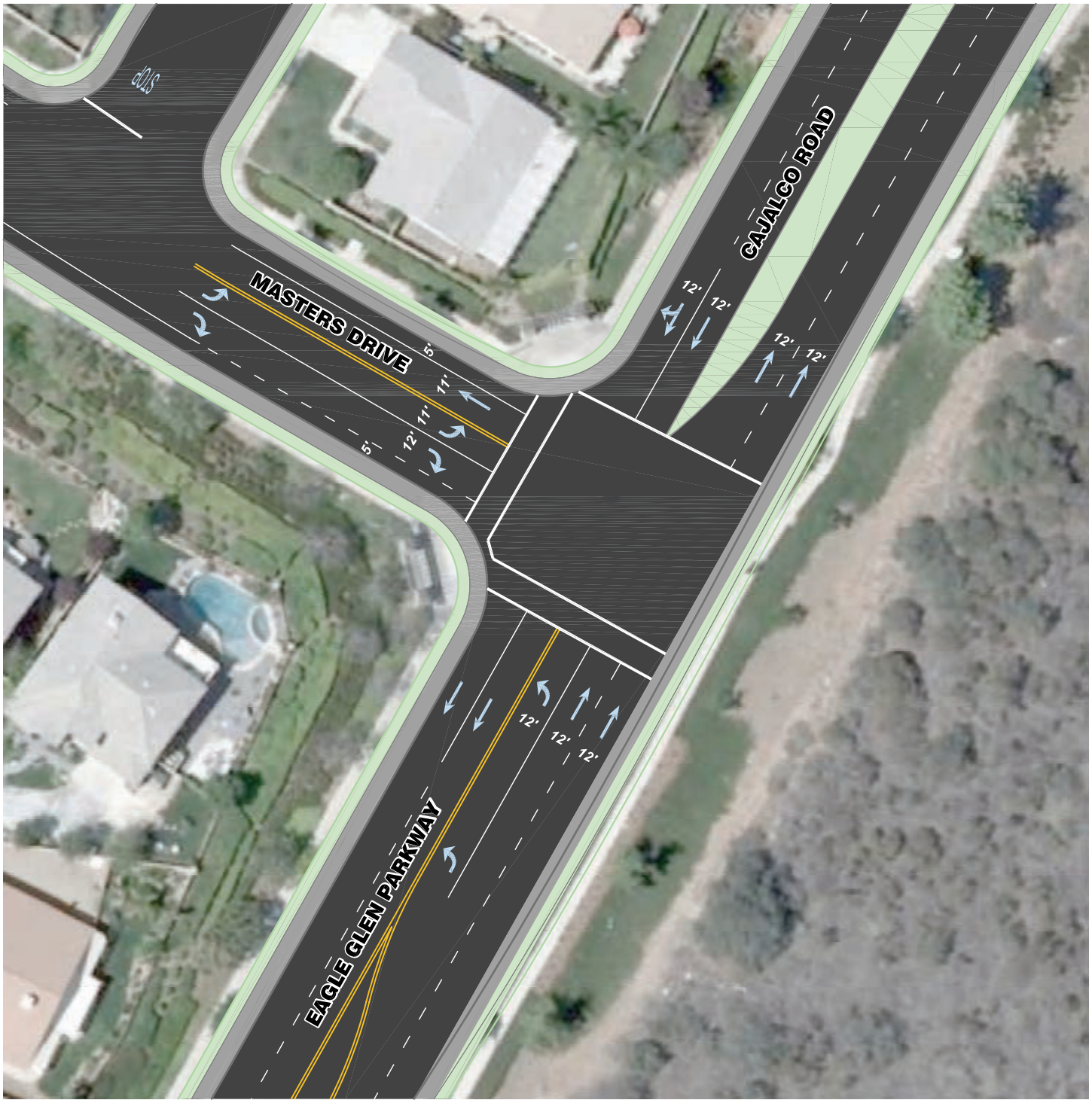

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EXHIBIT 4

2035 CONCEPTUAL STRIPING PLAN FOR BEDFORD CANYON ROAD AT EL CERRITO ROAD

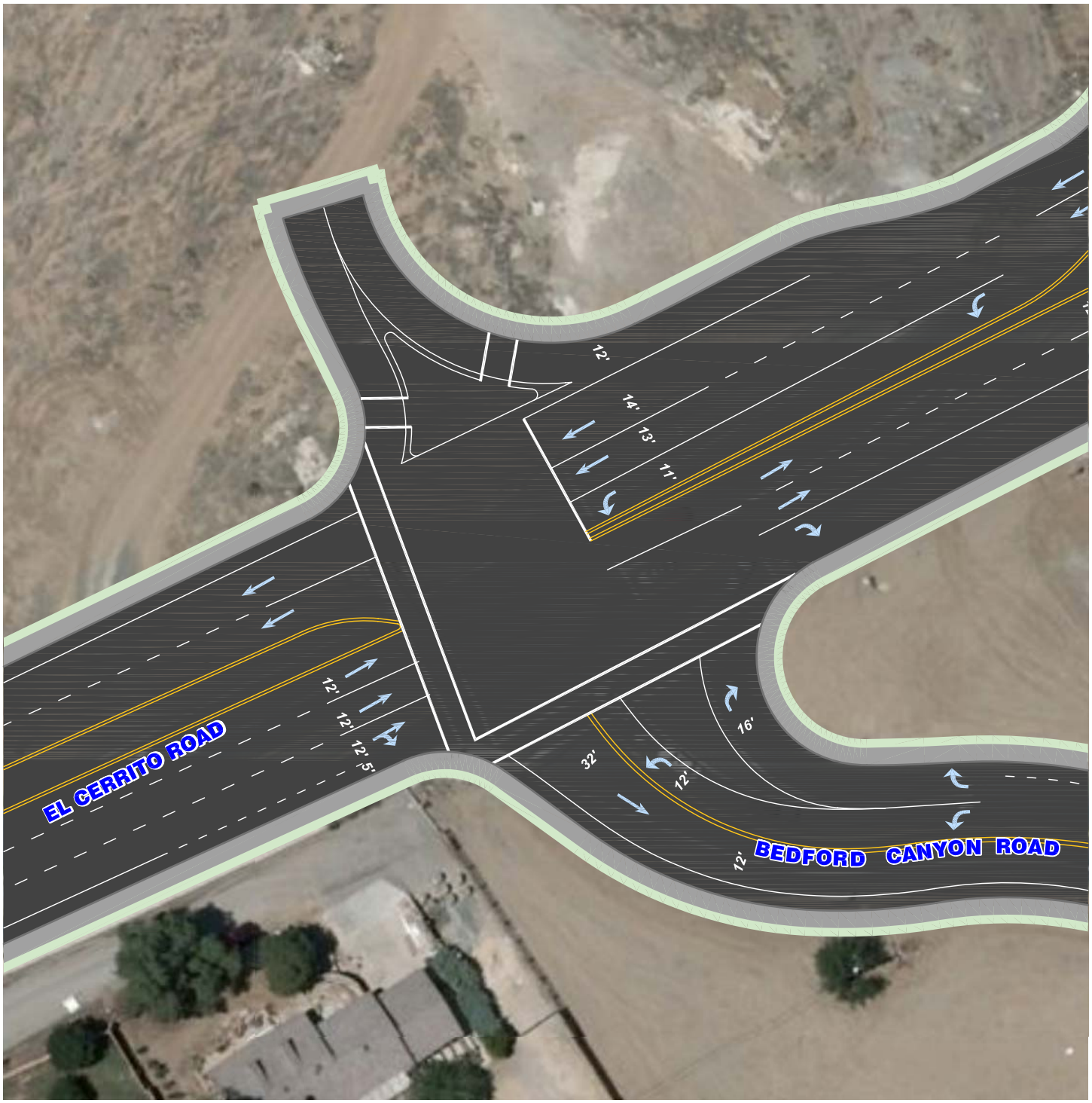

EXHIBIT 5

2035 CONCEPTUAL STRIPING PLAN FOR BEDFORD CANYON ROAD AT GEORGETOWN DRIVE

N

EXHIBIT 6

2035 CONCEPTUAL STRIPING PLAN FOR BEDFORD CANYON ROAD AT EAGLE GLEN PARKWAY

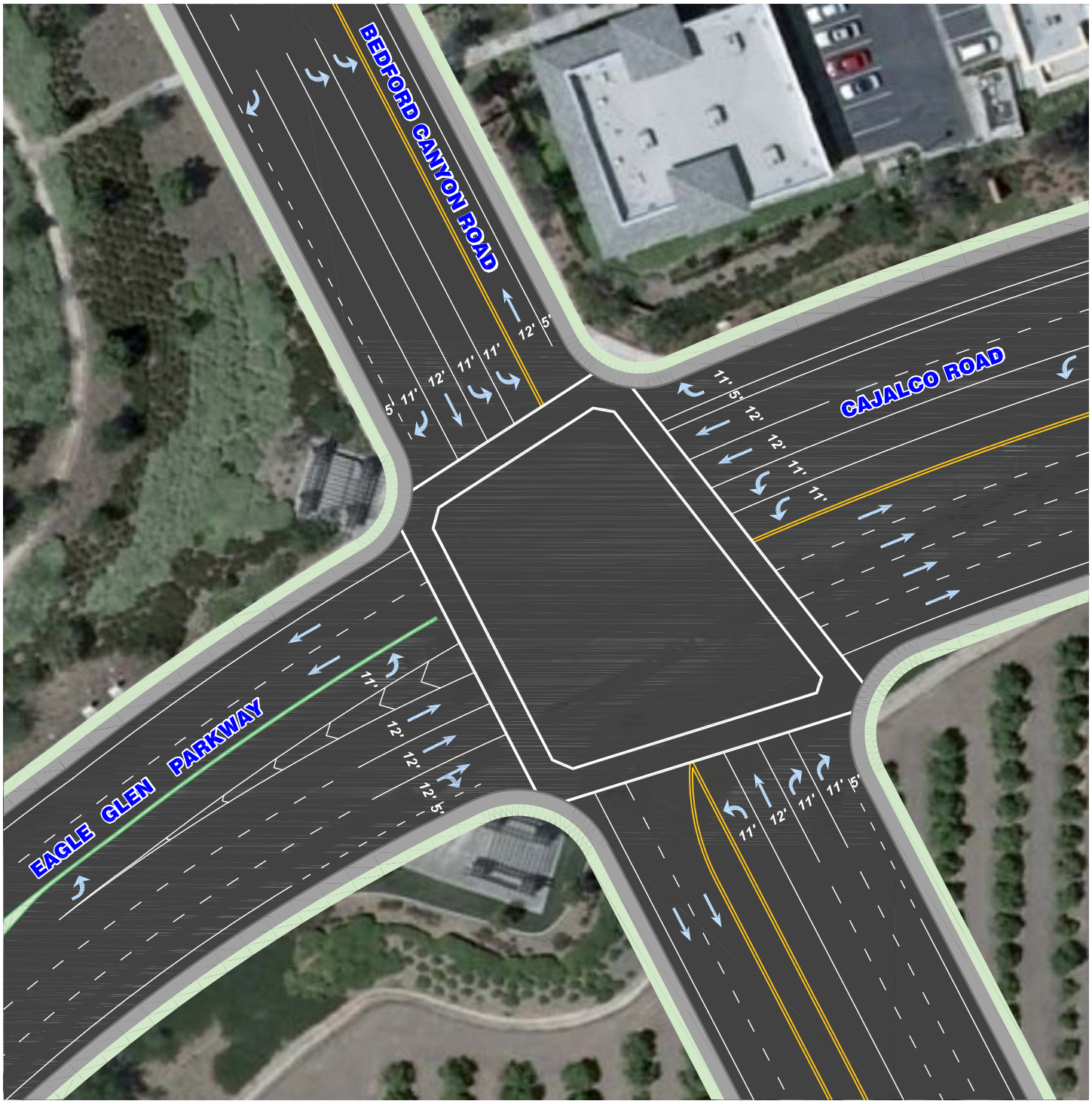

EXHIBIT 7

2035 CONCEPTUAL STRIPING PLAN FOR I-15 SB RAMPS AT EL CERRITO ROAD

N

EXHIBIT 8

2035 CONCEPTUAL STRIPING PLAN FOR I-15 SB RAMPS AT CAJALCO ROAD

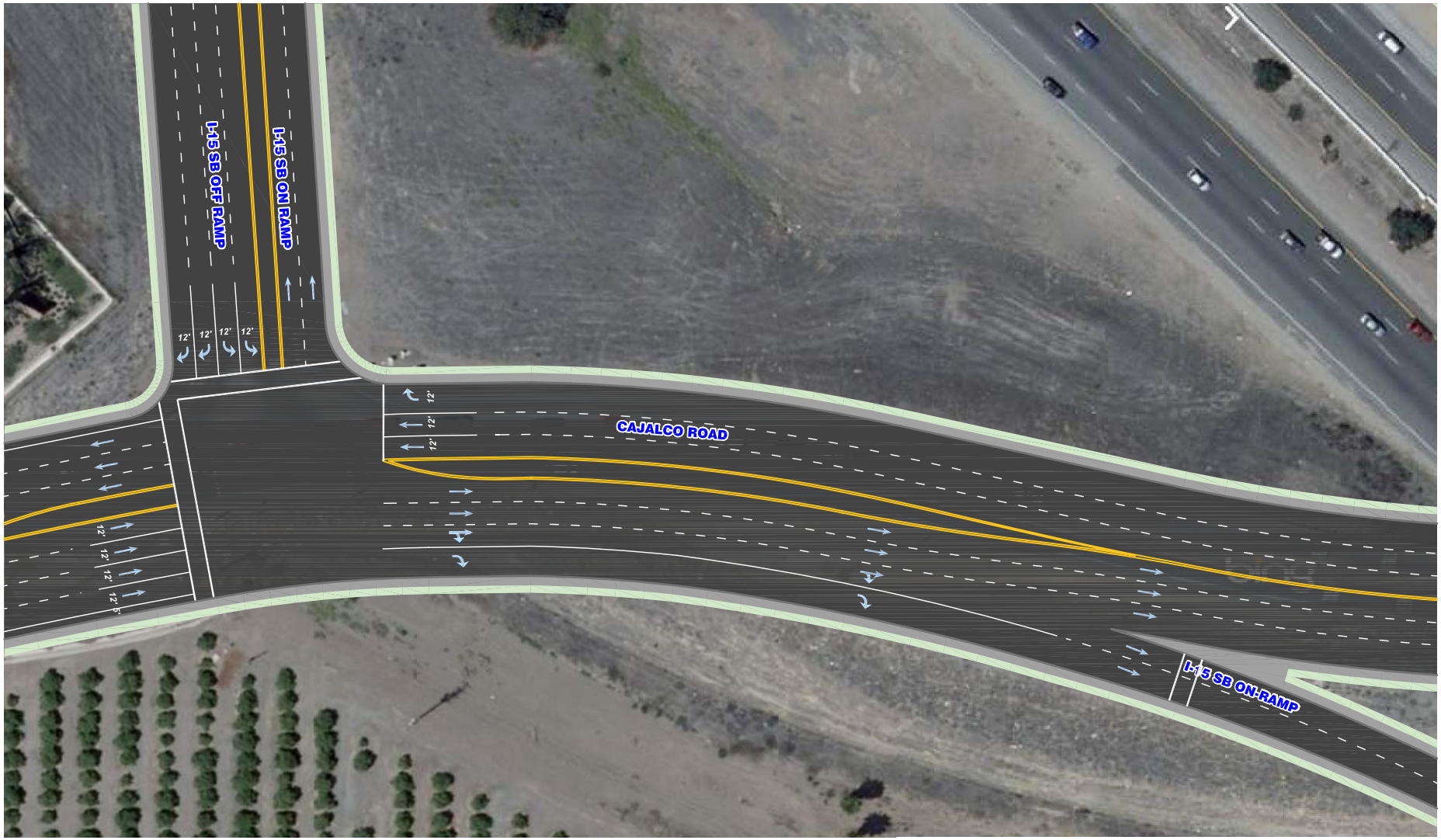

EXHIBIT 9

2035 CONCEPTUAL STRIPING PLAN FOR I-15 NB RAMPS AT EL CERRITO ROAD

EXHIBIT 10

2035 CONCEPTUAL STRIPING PLAN FOR I-15 NB RAMPS AT CAJALCO ROAD

EXHIBIT 11

2035 CONCEPTUAL STRIPING PLAN FOR GRAND OAKS AT CAJALCO ROAD

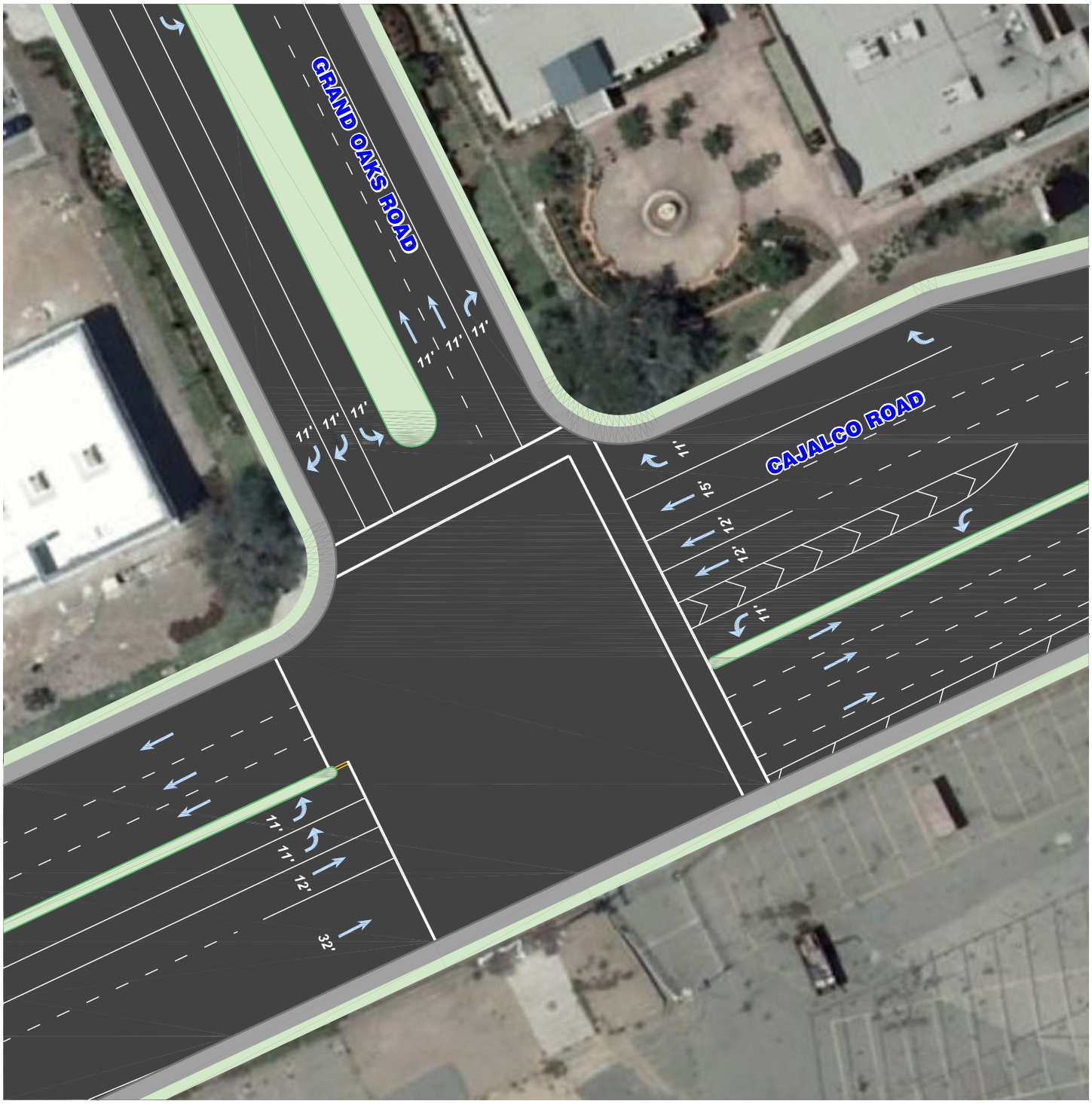

EXHIBIT 12

2035 CONCEPTUAL STRIPING PLAN FOR TEMESCAL CANYON ROAD AT CAJALCO ROAD